THE DOCK & HARBOUR AUTHORITY

No. 149. Vol. XIII MARCH, 1933

Editorial

The Port of Casablanca, Morocco.

The Port of Casablanca, situated on the west coast of Morocco, has so developed in the past few years that it is to-day the most important centre of trade on the coast of Morocco. It is also of inestimable value as a port, the coast of Morocco generally giving very poor shelter for shipping.

The first attempt to construct a harbour at Casablanca was made in 1906, the project drawn up amounting to 2,500,000 francs. The construction of this small harbour was commenced under great difficulties owing to the rough seas which occur on this coast and to interruptions by native risings. Several attempts were made to complete the harbour, but in the year 1913 a new scheme was devised for the building of a modern harbour, as the necessity had then arisen for a port on a much larger scale than previously planned.

These developments allowed for the extension of the main breakwater seawards from 300 metres to 1,900 metres; the construction of a transverse breakwater 1,500 metres long; the extension of the East and West jetties, which, when completed, formed an inner basin; and providing 700 lineal metres of wharf in the inner basin. These works were estimated to cost about 46,000,000 francs.

Difficulties again arose during the course of construction, partly owing to the very rough seas and also to the outbreak of the Great War, but the latter difficulty was only a temporary one.

The breakwater was completed in 1923, since which date it has been lengthened at various intervals, and it has now reached a length of 2,250 metres. Since the completion of the 1913 project further works have been undertaken, these comprising the laying down of a phosphate wharf, the Commerce Jetty and a coal wharf, the two latter works being completed in 1932.

The equipment of the port is as yet insufficient to meet the requirements of trade, and to satisfy this need there is now in course of erection 20 electric cranes of 5 tons lifting capacity and special elevators for the grain trade. These elevators, which will be built of reinforced concrete, have a total capacity of 30,000 tons, and will be capable of loading up to 400 tons per hour. Large storage sheds for general and special cargoes and quayage transit sheds are also to be built on the jetties.

The trade of the port has shown a steady increase since 1912, and has certainly warranted the construction and general development of the Port of Casablanca.

In 1912 imports amounted to 120,000 metric tons, but this figure had risen to 771,750 metric tons in 1929. A far larger increase has been shown in the export trade, as in 1912 only 10,000 metric tons of goods were exported, whereas in 1929 this figure had risen to 2,275,321 metric tons—a very big advance, chiefly owing to the increased shipments of phosphate.

The tonnage of ships for 1912 was 970,000 registered tons, as against 5,000,000 registered tons in 1930.

An illustrated article on the Port of Casablanca by M. Georges Toutlemonde, Engineer of Public Works, Casablanca, appears on another page, and the Port of Casablanca also forms the supplement for this month's issue.

Annual General Meeting of the Dock and Harbour Authorities' Association.

The Annual General Meeting of the Dock and Harbour Authorities' Association for the year ended 31st December, 1932, was held at the Hotel Belgravia, Grosvenor Gardens, S.W.1, on Wednesday, February 15th, 1933, when the annual report was presented and adopted. Owing to the President (Mr. J. E. Dawson) being absent through illness, Lord Ritchie of Dundee presided over the meeting.

The most important case which had been taken up by the Association during the course of the year concerned the Import Duties Act, 1932, and the " value of goods for the purposes of this Act." A difficulty arose over the meaning of the word " value " as at first the Commissioners of Customs agreed to value being fixed at ship's rail and thus eliminating the addition of landing charges. Afterwards, however, the Commissioners of Customs altered the basis of value as follows:—

" The definition of value in Section 15 of the Import Duties Act, 1932, includes all costs, charges and expenses incurred in or as a necessary condition to unloading the goods from the importing vessel and depositing them on the quayside or in a lighter alongside the ship (including canal, dock and harbour dues which are charged to the importer over and above the freight) but does not include charges incurred after the goods have been so deposited, e.g., lighterage and charges for depositing in warehouse or removal from the docks, opening packages for Customs examination or passing the Customs entry."

The result of this new construction meant that similar goods had different values at different ports and thus difficulties followed. The Association therefore took up the matter again with the Commissioners of Customs with the result that the following agreement was reached and this has been working satisfactorily:—

" An agreement on the question of the inclusion of dock dues, landing charges, etc., has been reached on the following lines, and will apply in all cases where the value of goods is based on a c.i.f. invoice and only where the dues and charges referred to are payable over and above the freight:—

(a) the actual amount of any charge specifically made for depositing the goods on the quay or in a lighter alongside the vessel will be included in the value, or if the charge covers that service and other services besides, such an amount as may reasonably be held to cover that service; and

(b) a percentage equal to one-tenth of 1 per cent. of the c.i.f. value will be included to represent the dutiable value of any tolls on the goods which are not charges for a specific service, e.g., the London Port Rates, the Liverpool Dock Rates and Town Dues and the Manchester Ship Canal Tolls.

The procedure will apply in the case of all *ad valorem* import duties, but will not affect any arrangement made with trade associations, etc., relating to goods delivered on consignment. . . ."

Another matter of interest which the Association welcomed was the reference made by the Rail and Road Conference Report to the effect that everything possible should be done to assist and expedite a free flow of traffic to and from the ports and upon which the prosperity of the country so largely depended. It was on this ground that they felt justified in urging that no increase in the present taxation should be made on goods vehicles used wholly within the ambit or area of the ports.

Sir William Crundall, Chairman of the Dover Harbour Board, was unanimously elected President for the ensuing year.

The following were elected Vice-Presidents:—

Lord Ritchie of Dundee (London); Mr. R. D. Holt (Liverpool); Mr. W. F. Robertson (Clyde); Mr. R. E. Herdman (Belfast); and Mr. Alfred Watkin (Manchester).

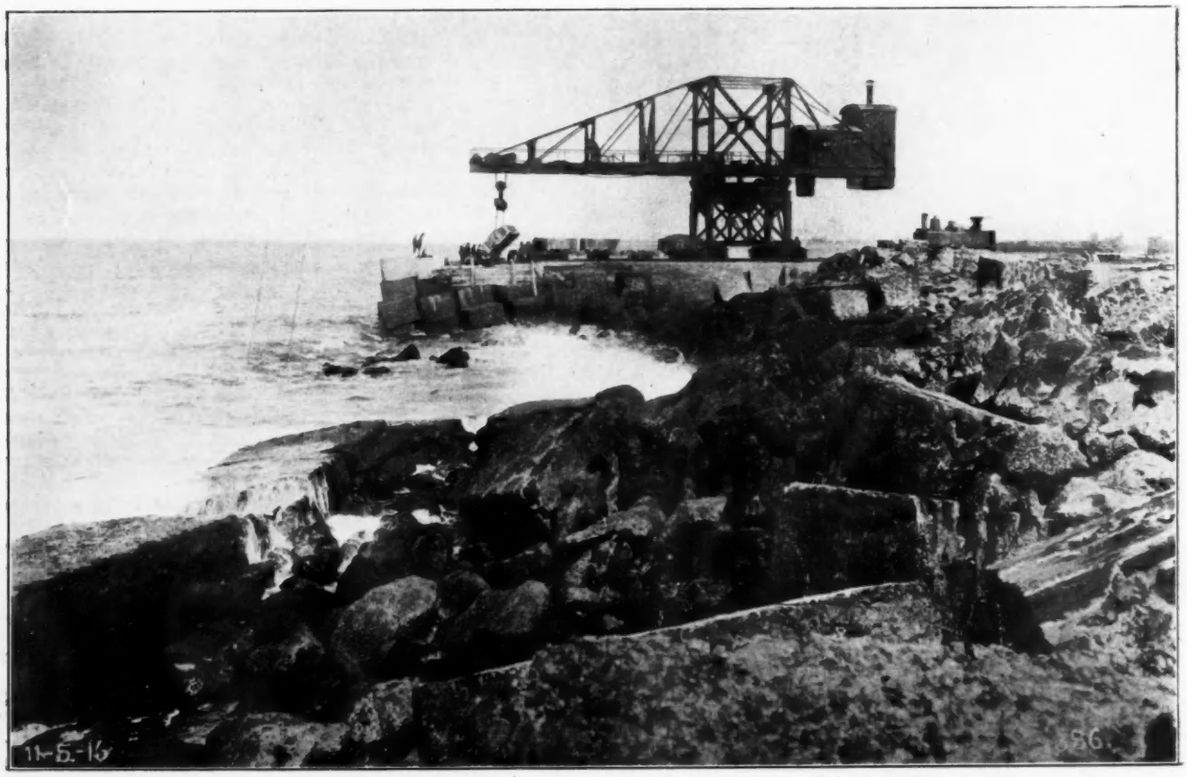
Lt.-Col. J. T. C. Moore-Brabazon, M.C., M.P., was elected Parliamentary Chairman for the Association.

The following members were elected to the Executive Committee for the ensuing year:—

Lt.-Col. T. G. Poole (North-East Coast of England); Sir David J. Owen (London District and South Coast); Mr. R. H. Jones (Bristol Channel); Mr. J. G. B. Beazley (Liverpool and North-West District); Mr. F. A. Eyre (Manchester Ship Canal); Mr. G. W. Service (West Coast of Scotland); Dr. Thomas Cowan (East Coast of Scotland); Mr. M. J. Watkins (Northern Ireland); and Mr. William Hewat (Irish Free State).

The Port of Casablanca

Photo] *Aerial view of the Harbour in 1928.* [Flandrin, Casablanca



Photo] [Schneider & Co., Casablanca

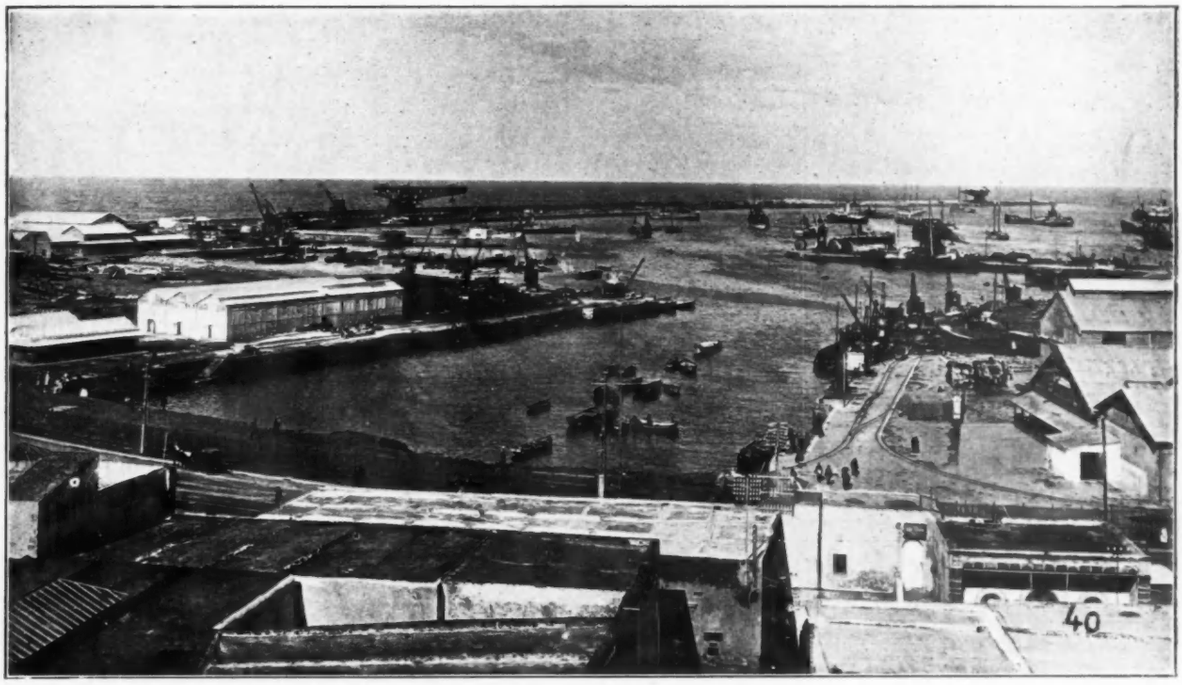
The small Eastern Jetty, 11th May, 1916. The 25-ton Titan tipping concrete for the decking.

*The Port of Casablanca**

Ocean Gateway of Morocco

By GEORGES TOUTLEMONDE, Ingenieur des Arts-et-Metiers et des Travaux Publics de l'Etat

(TRANSLATED)



Photo] *View of the Harbour in 1922.* [Flandrin, Casablanca

In front, the old Marine Dock and the Portuguese Wharf. In the distance, the small East and West Jetties and the Paul Chaix Wharf under construction.

I—Historical

WHILST the dark Middle Ages were making way for modern times, the maritime nations of that period were inaugurating present-day geography, with the aid of the mariner's compass, by discovering distant countries and demonstrating the rotundity of our earth by sailing round it. The fifteenth century knew such men as Magellan, Vasco da Gama and Christopher Columbus. It was then that Portuguese navigators coasted along the Atlantic seaboard of Morocco, and their records mention the existence of a certain Mussulman township of fisherfolk and seamen, named Anfa.

The shelter afforded by the natural haven was poor enough, surrounded as it was by dangerous reefs, and this is how the Portuguese, Ruarte Pacheco Pereira, describes it in his sailing directions:—

> **"There is but little beach and a bad bottom; the seaward sign of the city of Anfa is a large bay within a reef which leaves an open passage to the North-East, but is completely closed on the South-West side."**

Notwithstanding this not very inviting approach, the fellow-countrymen of Pereira occupied Anfa in 1515 and called it Casa Branca. This landing-place, however, was of less importance than other Portuguese posts on that coast, such as Safi or Mazagan.

The occupation lasted more than 200 years, and it was not until the close of the eighteenth century that Islam thrust out the Europeans into the sea.**

The town then received its present Arabic name, "Dar el Beïda," or the "White House"; in French, "la Maison Blanche," and in Spanish "Casa Blanca." Nevertheless, all intercourse with Christians was not broken, and a few bold Spanish merchants still maintained businesses in the city, though beset with difficulties of every kind.

In spite of a chaotic and lawless situation, commercial transactions between this port in the mysterious land of the Moors and the ports of Europe increased. It was in 1862 that the Pâquet Shipping Company of Marseilles inaugurated its first service to Casablanca.

In 1905 the treaty of Algeciras settled to some extent the relations of the Moorish empire with the principal European States: the Administration of the Moroccan Debt was created, and in order to increase the customs revenue the maritime development of Casablanca became necessary.

In 1906 the Sultan of Morocco accredited to the Pasha of the locality a French company, the "Compagnie Marocaine." This company let a contract for the construction of a small harbour for local boats known as "barcasses"; the main contractor was the firm of Schneider and Company. The project amounted to a value of 2,500,000 francs (£100,000 pre-war), and was to the design of Mr. J. R. Renaud, a naval hydrographic engineer. The works were begun under the direction of Mr. Michel Schmidt (Ingénieur des Arts et Manufactures), their execution being painfully slow, for everything had to be built up from the beginning in unfriendly surroundings; it was interrupted by the native risings of July, 1907, which led to the bombardment of the town by the fleet of Admiral Philibert and the landing of troops under General Drude. Construction was recommenced in 1908, during comparative political peace, and was carried on in spite of violent seas which swept over the works in progress, occasioned numerous accidents and drove ships ashore.

In 1911 the sky clouded over again internationally; the German Emperor's hostility to France was officially manifested at Agadir and Tangiers; the bloody insurrections at Fez broke out. This state of unrest once more brought the works to a standstill. Finally, however, thanks to the unhappy compromise over the Congo, the year 1912 saw France declare a protectorate over the Cherifian empire, and General Lyautey, the officer commanding the Oran division, was appointed as Resident Commissioner General.

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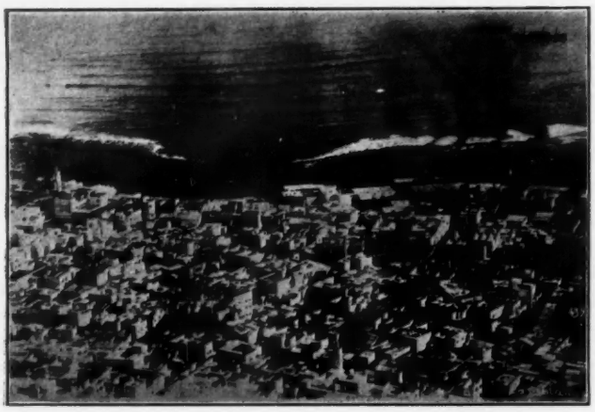
*This article is an extract from the Review "Arts-et-Métiers" Technical Journal of "Société des Ingénieurs des Ecoles Nationales d'Arts-et-Métiers" 9bis, Avenue d'Iéna, Paris (16e).

**Traces of the Portuguese occupation of Morocco are numerous and frequently remarkable, both in architectural and in engineering works: bridges, waterworks and marine structures. Moreover, it was in the 18th century that a small mole was formed at Casablanca, which was re-discovered on commencing the present undertaking and was named the "Portuguese Wharf."

The Port of Casablanca—continued



Photo] [Flandrin, Casablanca

Casablanca and its bay in 1907. In the centre may be seen the Naval Dock, with the Portuguese Wharf on the left. (Photo taken by an aeronautical officer of the expeditionary force.)

Photo] [Cassuto, Casablanca

The violence of the sea at Casablanca. The sea striking the main breakwater. A breaking wave, rising to a height of over 20 metres, leaping right over the breakwater into the bay.

II—The Harbour Project

Stages of its Execution.

The need for a large modern harbour became evident at once, from the triple standpoint of military, economic and political expediency. But the problem of where to place it had yet to be solved. There was no natural haven clearly in evidence on the level coast of Western Morocco; detailed surveys had to be made before a decision could be reached which would allow these important works to be undertaken. The new Resident ordered a double enquiry to be made, both economic and technical; this was rapidly carried out by a mission under Mr. Delure, Director of Public Works of the Protectorate, and comprising inspectors of the Roads and Bridges Department (Pontes et Chaussées) and officers of the Navy. Its findings were adopted by General Lyautey, who had the exceptional merit of deciding, amid acute controversy, that the great Port of Morocco should be established at Casablanca.

A scheme was drawn up under the direction of Mr. Delure by Mr. François, Roads and Bridges Engineer. The governing feature of the future harbour was that of a main breakwater starting from the western extremity of the small harbour already existing and running out approximately north-east. At a point about 1,000 metres from the root of this breakwater it turned eastward, bringing its axis nearly parallel with the shore. Thus the main breakwater would protect the bay from the surf*, from the heavy ocean swell and from tidal waves, which are generally series of waves not raised by local winds but by the violent storms of the North Atlantic.

The transverse breakwater, perpendicular to the main one, was to complete the enclosure on the east, giving an area of 150 hectares (375 acres) to the eventual zone of anchorage. As regards bottoming, the future harbour would have many advantages. Soundings, in fact, revealed a crust of soft limestone under a layer of clay and several strata of sand of no great depth. Moreover, the bottom was nearly all below the level of —5 metres, and an area of about 50 hectares (125 acres) was below the level of —9 metres. Thus, by dredging and filling, it would be feasible to obtain a commodious harbour, which would be accessible at any time, at any state of the tide, and for all vessels drawing less than 10 metres, i.e., the vast majority of vessels afloat.

A further point, very important in looking to the future, was that the axis of the main breakwater, extended, left on the north-west the contour —20 m. and kept at a nearly constant depth between —16 m. and —18 m., upon a clear rocky bottom of fair regularity. Thus any subsequent extension of the harbour would be facilitated by this extremely fortunate natural circumstance.

The project was put out to tender and comprised in the first instance the execution of the following works:—

1.—Extension of the main breakwater seawards from the chainage of 300 metres to 1,900 metres.

2.—Construction of the transverse breakwater, 1,500 metres long, leaving at the end of it an opening 250 metres wide for entrance to the harbour.

3.—Extension of the East and West Jetties, forming an inner basin (" petit port ") of 10 hectares (25 acres) for smaller craft.

4.—Provision of 700 lineal metres of wharf in the inner basin and 16 hectares (40 acres) of reclamation.

The contract was let on March 25th, 1913, entrusting the work to a French syndicate composed of three firms—Messrs. Schneider and Co., J. and G. Hersent, and the Compagnie Marocaine; the estimated cost was about 46 million gold francs (nearly £2,000,000); the time allowed was seven years.

The realisation of this extensive programme was begun at once, under the direction of the late Mr. Paul Chaix. The heavy Atlantic swell, however, which is very strong on this coast, had unfortunately very disagreeable surprises in store for the courageous undertakers. Moreover, there were not wanting plenty of pessimists, critics, disappointed persons, who, whenever the sea gained a temporary advantage over the works in progress, were free with their criticisms and with negative advice, which happily was not heeded. After the severe winter of 1913 the yards were getting busy again in the fine season, when the Great War broke out.

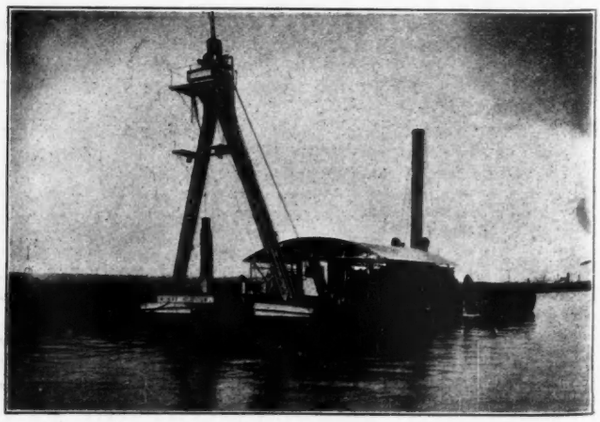
For several months the works were suspended, but they were recommenced in 1915. Effort was now concentrated upon

***Surf is a phenomenon found on certain coasts and especially the African Coast; it is a permanent breaking, in varying intensity, of the ocean swell, at a varying distance from the shore, the cause of this being the progressive rise of the rocky bottom. The surf forms a belt of foam, which prevents ships from coming closely inshore.**

Photo] [Flandrin, Casablanca

The shore and the Sidi Belyoud cemetery. Commencement of a small jetty, 1907.

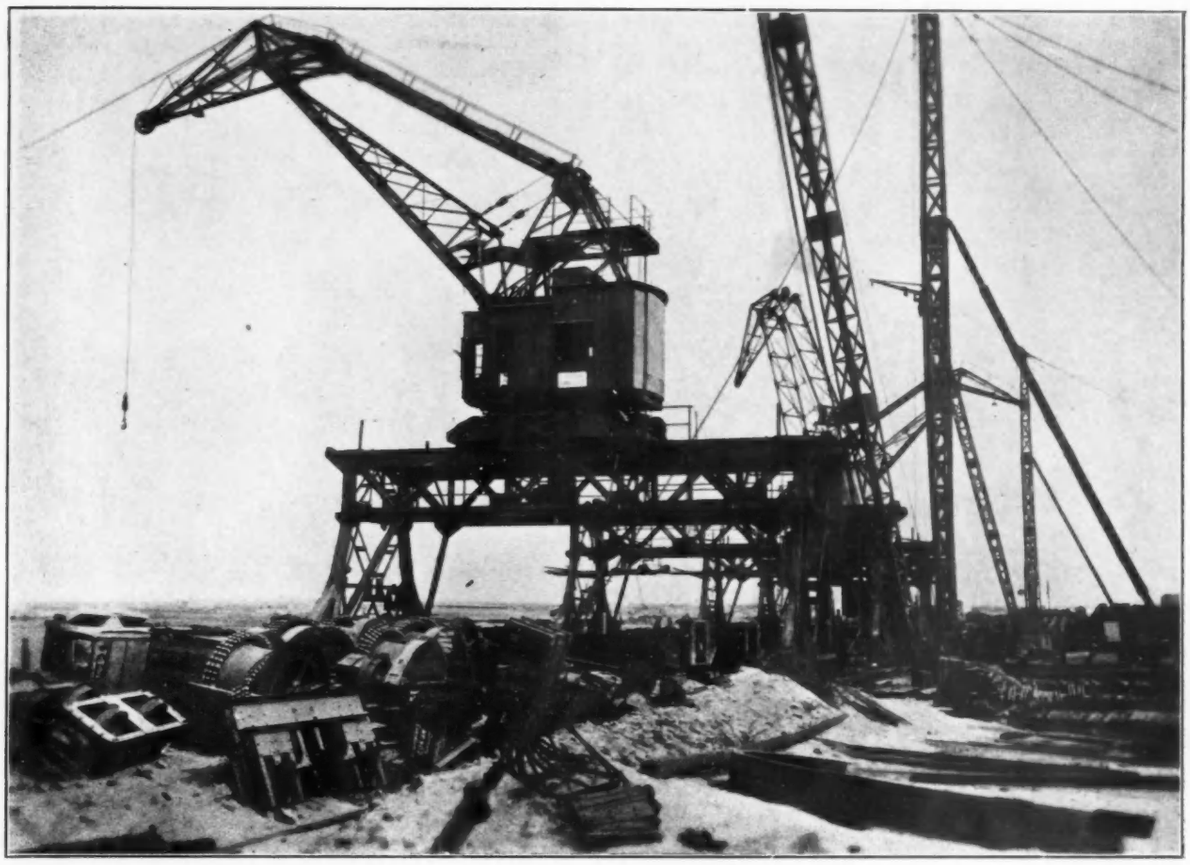
A view taken from this spot 18 years after is shown at bottom of page 131.



Photo] [Schneider & Co., Casablanca

Rock breaker at work.

The Port of Casablanca



Photo] [Cassuto, Casablanca

Commerce Jetty. Erection Yard of the 5-ton Demag electric cranes on the East Wharf.

Photo] [Flandrin, Casablanca

Eighteen years after. A view from about the same spot as illustration shown at foot of left column on page 130.

The Port of Casablanca—continued

the main breakwater, to afford protection to the sheltered area, within which the other works were to be constructed. But supplies were difficult, especially in cement; the rise in price of raw materials became more pronounced; the pre-arranged periods and credits were exceeded; this situation of the undertaking could not continue much longer. In October, 1918, the possibility of curtailing the programme of works was considered, but such numerous protests were raised that the idea of the great harbour projected in 1913 was definitely confirmed. The peace of 1919 completely ratified the French occupation of Morocco, and the works continued with enhanced speed.

A first subscription on the market in 1913 had established the financial basis of the undertaking and at the same time covered the construction of the first quays, the main breakwater, the east jetty and an area of reclamation in front of the east end of the Arab city.

The work was prosecuted with such activity that the main breakwater attained a length of 1,900 metres by January, 1923, and the mail boats from Bordeaux and Marseilles began to move alongside in April.

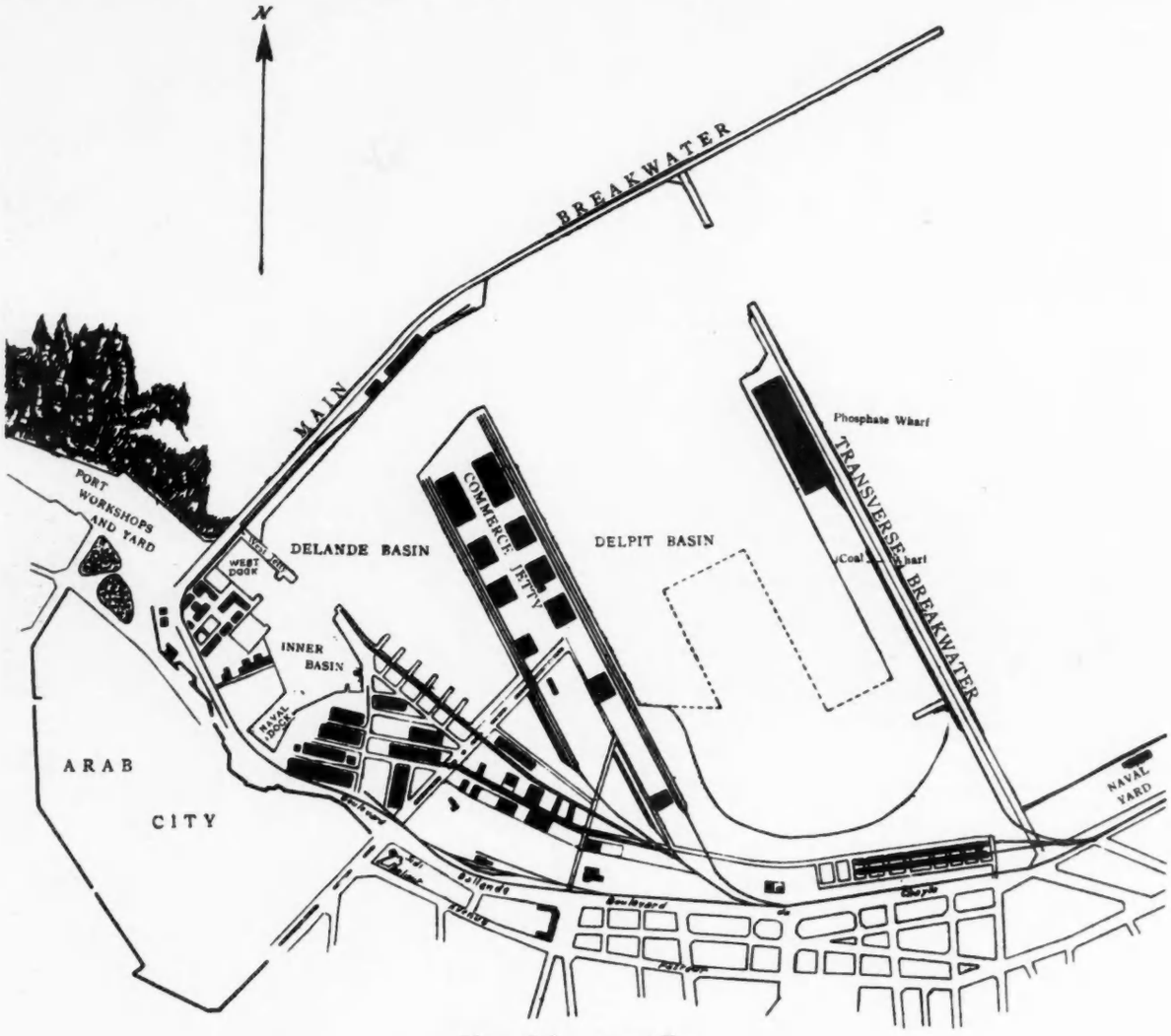
In 1924 a second subscription was taken up for the purpose of extending the main breakwater to 2,080 metres and for the formation, alongside the outer end of the transverse breakwater, of solid-filled reclamation retained by a quay wall, to serve as a phosphate loading berth. This programme was completed in 1926.

A third instalment of capital carried the breakwater out to 2,250 metres, provided for the construction of an internal jetty or " mole," parallel with the transverse breakwater and 190 metres in width, as well as doubling the length of the reclamation and quay wall forming the phosphate wharf.

A fourth instalment raised in 1928 enabled the internal jetty called " Môle du Commerce " to be increased to 220 metres in width, the continuation of the solid-fill against the transverse breakwater southward from the phosphate wharf for a length of 200 metres faced with a quay wall, this accommodation being intended for the coal trade.

The present state of the works is outlined on the plan reproduced on this page. The Commerce Jetty and the Coal Wharf were completed in 1932.

It is probable that before final completion of these works further capital will be raised to deal with future works, including a second internal jetty—parallel with the first but shorter—and graving docks.



Plan of the present Port.

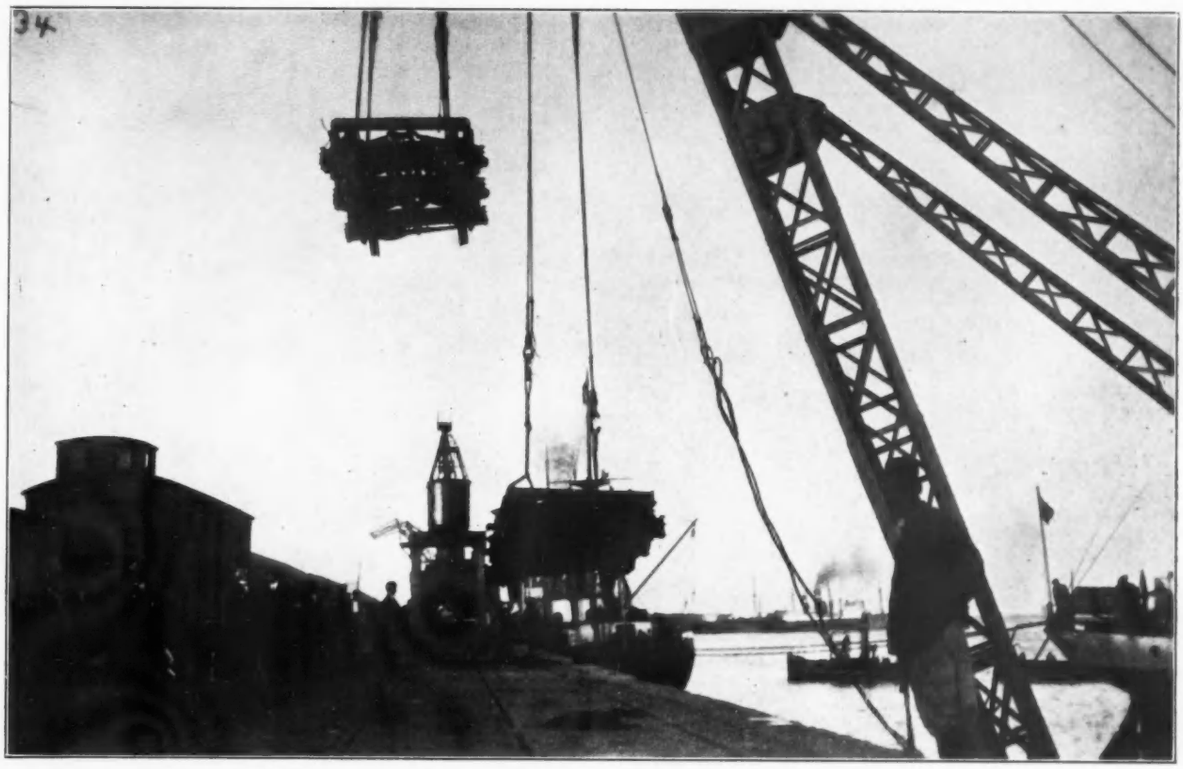
The method available for later extension is very simple: it would consist in prolonging the main breakwater in a straight line to increase the area of sheltered water beyond that now enclosed and thus creating a sort of outer harbour giving a full measure of safety. Then, according to requirements of traffic, it will be an easy matter to throw out other jetties from the shore by the Black Rocks, parallel with the present jetties, and thus to form additional basins.

III—Brief Description of the Principal Works

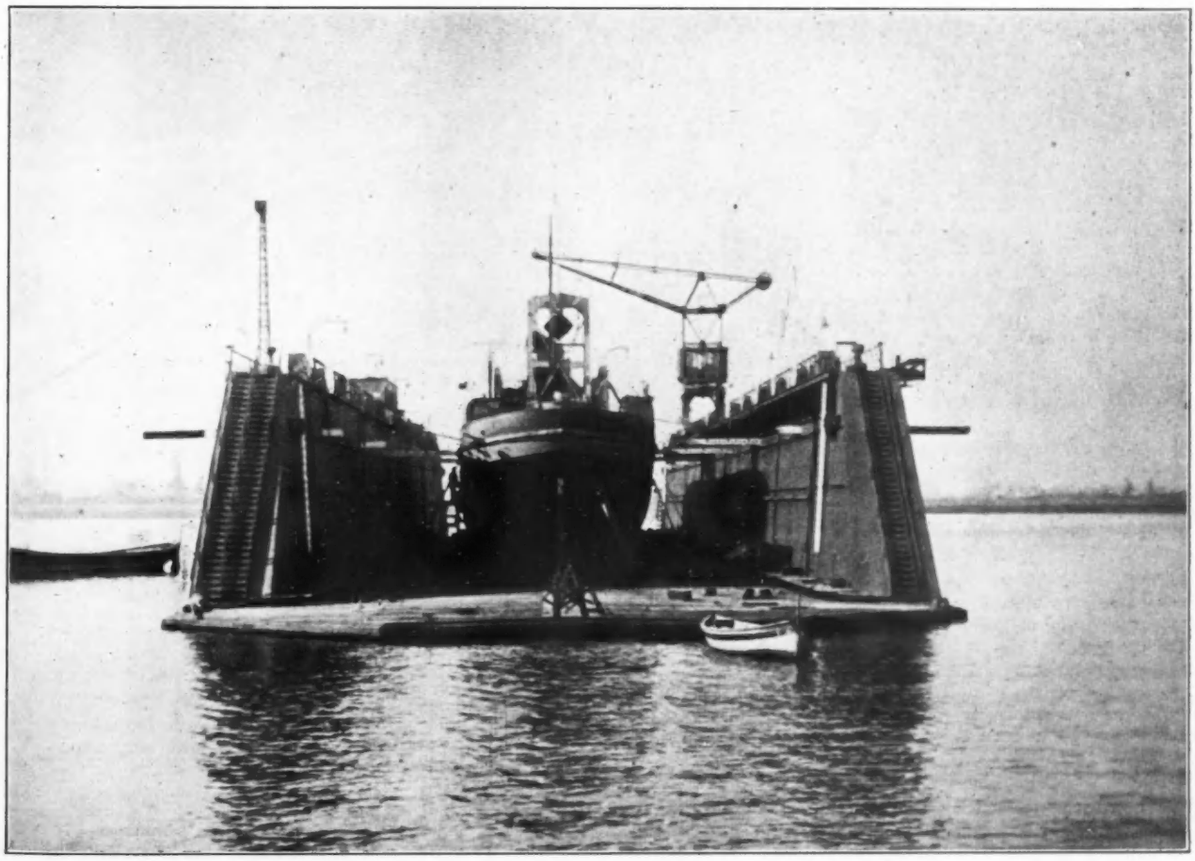
Main Breakwater (Grande Jetée).—The Supplement shows the principal cross-sections of the main breakwater. This is formed, as far as 1,200 metres out, by a hearting of uncoursed artificial blocks; these blocks are of concrete, weigh 45 tons and rise to the level of high water (+4 m.). At this level a floor or decking of concrete has been laid, up to the level of +6 m. A parapet wall formed of artificial blocks, built in courses, and with reinforcement anchored in the concrete decking, rises on the seaward side to the level of +10.50 m.

Beyond the chainage of 1,200 metres, natural stones are used instead of artificial blocks. These blocks of limestone, weighing from ½ ton to 15 tons, are blanketed on top and on the seaward slope with a protecting layer of 45-ton artificial blocks, and upon these is poured the decking, extending from the 6-metre to the 7-metre level. The parapet wall, which is brought up to the level of 11.50 m., is omitted from chainage 1,700 m. onwards. The substitution of natural for artificial blocks has effected a saving of 60 per cent. in the construction cost of the main breakwater. Nevertheless, the cost of this

The Port of Casablanca

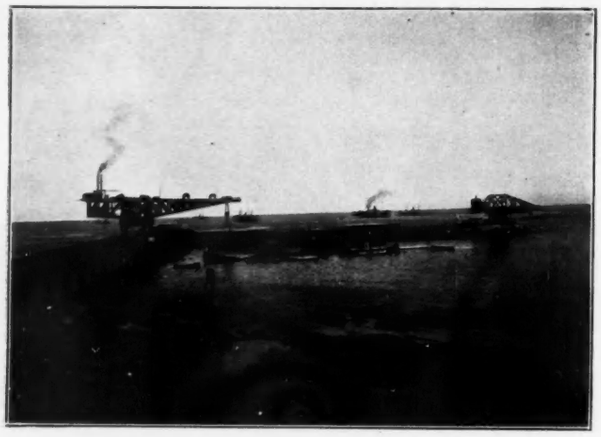


Photo] *The 50-ton floating sheerlegs landing a heavy load on the quay.* [Cassuto, Casablanca



The floating dry dock. The dredger "Vega" in dock.

The Port of Casablanca—continued



Photo] [Schneider & Co., Casablanca

The beginning of the main works. Commencement of the breakwater and completion of the small Western jetty. On the left, the 100-ton steam titan crane; on the right, the 25-ton steam titan which was afterwards used for the Paul Chaix Wharf and the transverse breakwater.

Photo] [Flandrin. Casablanca

Tidal wave in front of the Naval Dock.

work, whose dimensions are most imposing (80 metres in width at the base) amounts to approximately 100,000 francs the lineal metre.

Lee Breakwater (Jetée Transversale).—The transverse breakwater is formed entirely of natural blocks, covered by a concrete decking with a parapet wall. This structure being less exposed than the main breakwater, it has been possible to dispense with artificial blocks and adopt a section appreciably more economical, costing about 25,000 francs the lineal metre.

Quay Walls.—The quay walls at Casablanca are founded at a depth of at least —9 m. upon a rocky bottom carefully levelled up by a bed of bag concrete. Upon this foundation concrete blocks are laid in regular courses. The topping is of reinforced sections, with a pipe-trench for various service mains—water, electricity, drainage, etc. The external face of the upper part of these walls is of coursed hammer-dressed masonry. Recesses are formed at intervals in the walls and mooring rings, steps and ladders fixed therein. Finally, mooring bollards of reinforced concrete faced with " acierite " have been cast in homogeneous connection with the topping wall blocks. The more recent walls (Commerce Jetty) have been corbelled out at the back, in accordance with the " chair " type originated by Mr. Minard, Inspector General of Roads and Bridges.

Filled Areas.—The reclamation and levelling of areas behind the walls have called for large quantities of filling to be brought in, mainly, composed of two materials, quarry waste of schist and limestone, deposited as backing to the walls, and sand from the dunes filling the remaining space up to cope level.

IV—Organisation of the Undertaking

Materials and Methods of Construction.

From the outset the contractors found themselves faced with the perennial problems which arise in connection with marine works: the selection of quarries and the installation of yards for the making of artificial blocks.

The Maarif Quarry.—The search for sand and for stone suitable for making good concrete was no easy matter. It was only at 9 kilometres south-west of the port, at a place called Maarif, that a bank of quartzite with a density of 2.7 was found, which was considered to be suitable. The same quarry also produces schists which are useful for filling.

The stone is quarried in open cutting, though the bed is at some depth. The face is carried down to 15 metres below ground surface, the stone being broken up and loosened by blasting. The holes are bored with pneumatic drills, compressed air being supplied by an Ingersoll-Rand electric compressor of 80 h.p. The explosives used are cheddite and luxite.

The stone thus extracted is broken down to the required size (to pass a 6 cm. ring) by four Allis-Chalmers stone breakers. Grids and screens separate the stone into three categories—those that are too large are returned to the breakers; those of the required size are stored in timber bins over the loading tracks; and those that are too small pass through Simons crushers, by which they are reduced to sand.

The Maarif Quarry has proved capable of a daily output of 800 cubic metres of broken stone and 100 cubic metres sand. Electricity is supplied in a 3-phase 50-period current of 5,500 volts, transformed down to 500 volts, the power consumption being 280 k.v.a.

Sidi-Abderahman Quarry.—In 1918 the search for a quarry capable of producing large blocks of natural rubble led to the discovery of the Sidi-Abderahman Quarry, at 9 kilometres from the main breakwater, not far from Maarif but nearer to the sea. The seam is compact, unbroken and, notwithstanding a density of only 2.2, has proved quite satisfactory and produced blocks exceeding 100 tons. The stone was won at first by cutting, but later by blasting.

The face is about 1,000 metres long by 18 metres high, and the blasts bring down an average thickness of 5 metres. The holes are made vertically, every 6 metres, to a depth of 16 metres, the explosive used being super-luxite. The compressed air for the drills is provided by a battery of horizontal Ingersoll-Rand electric compressors. The handling of the blocks is effected by four steam cranes and two 25-ton derricks. Blasting takes place about every three months, to produce something like 40,000 tons at a time. After each fall follows the work of breaking up excessively large blocks. Then comes the

Photo] [Flandrin, Casablanca

Commencement of a small landing quay and storm over the works, 13th February, 1914.

Photo] [Schneider & Co., Casablanca

Tipping Barge unloading stone for the hearting of the main breakwater, 3rd February, 1921.

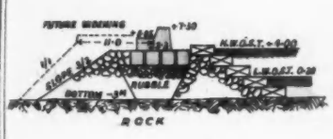
PORT OF CASABLANCA.

(M O R O C C O)

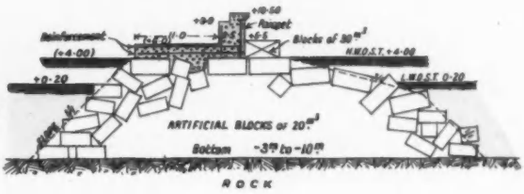
CHIEF ENGINEER OF PUBLIC WORKS;- MONS. DELANDE.

TYPE SECTIONS OF

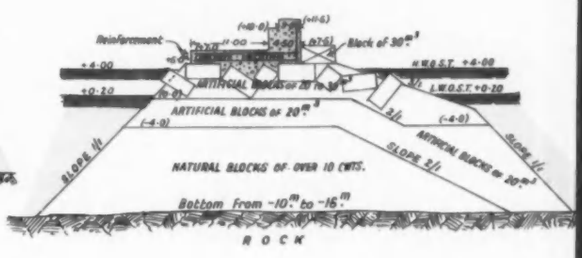
SECTION FOR 1ST 350M TO THE DEPTH OF -3M.

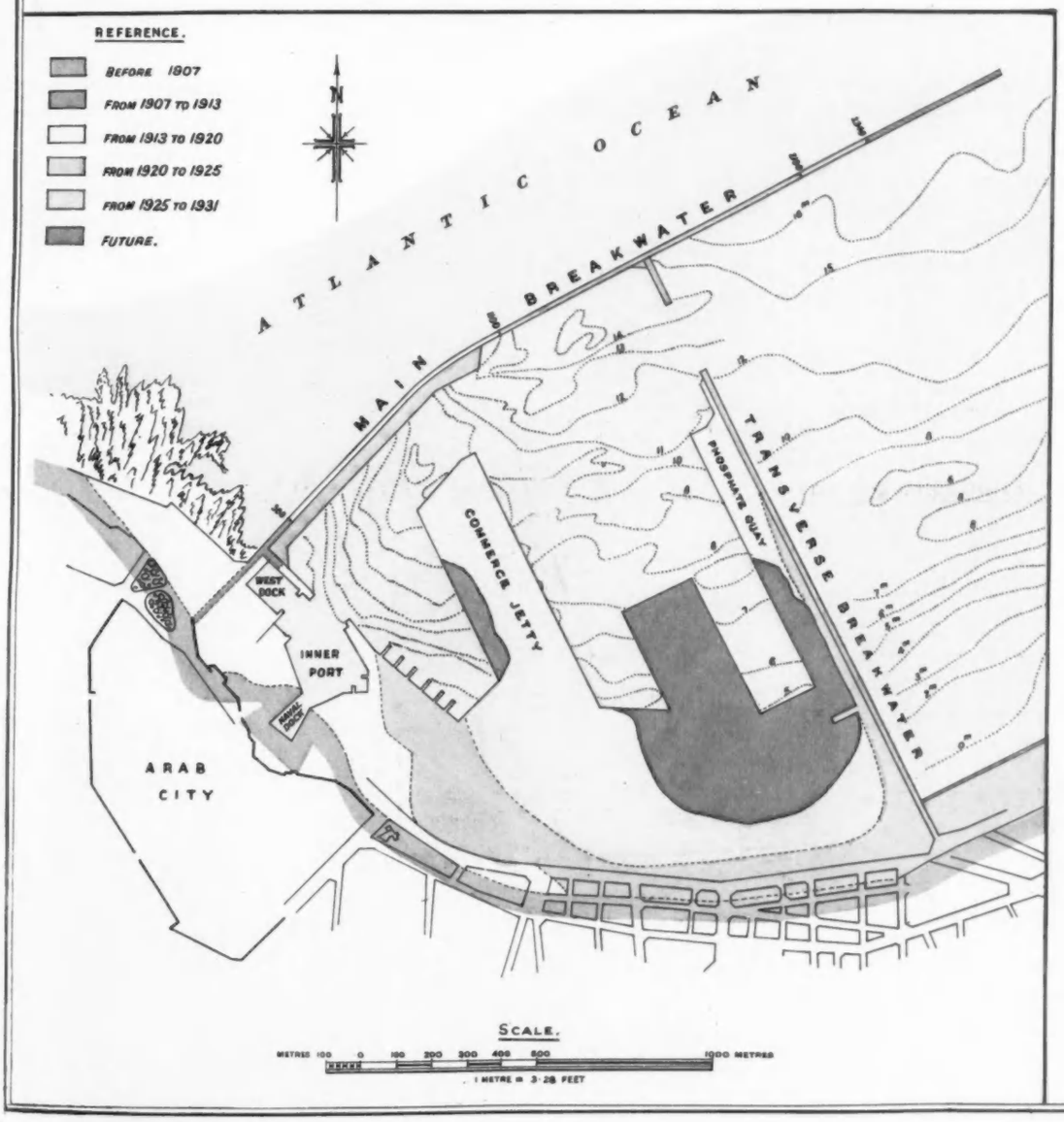


FROM 350M TO 1200M DEPTH FROM -3M TO -10M



FROM 1200M TO 1700M. DEPTH FROM -10M TO -16M





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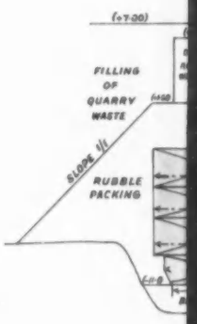
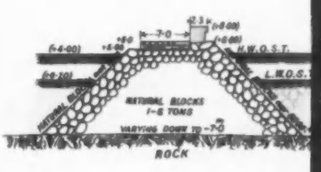


QUA
TRANSVERS

FOR 850M FROM SHORE.



TYPE SECTIONS OF

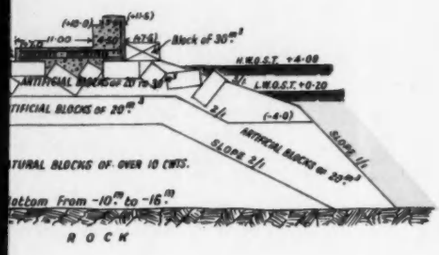
WARD & FOXLOW LTD. (LITHOS). 19, MA

T TO THE DOCK AND HARBOUR AUTHORITY, MARCH, 1933.

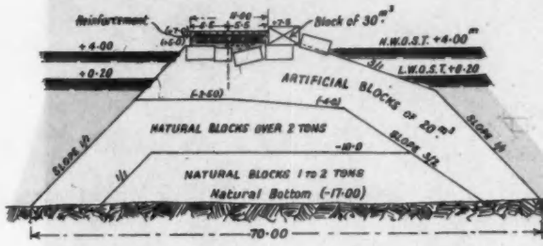
NCA.

E SECTIONS OF MAIN BREAKWATER.

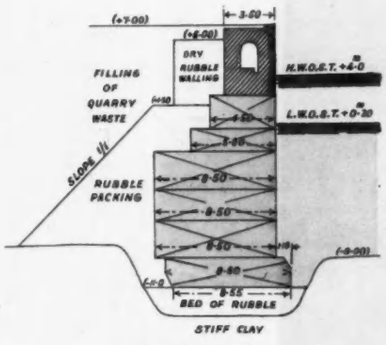
1200M TO 1700M.
TH FROM -10M TO -16M



FROM 1700M TO 2000M.

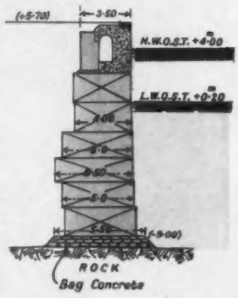


NEW COAL WHARF.
FOR DEPTH OF -11M



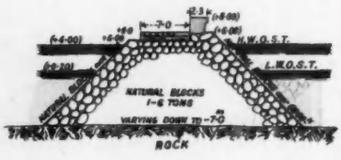
QUAY ON
TRANSVERSE BREAKWATER.

FOR DEPTH OF -9M

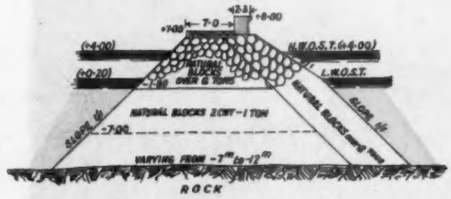


QUAY ON COMMERCE JETTY.

FOR 850M FROM SHORE.



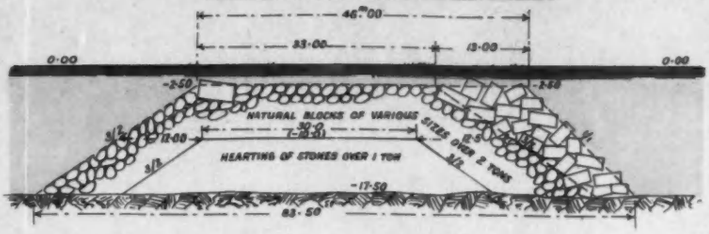
FROM 850 METRES TO 1450 METRES.



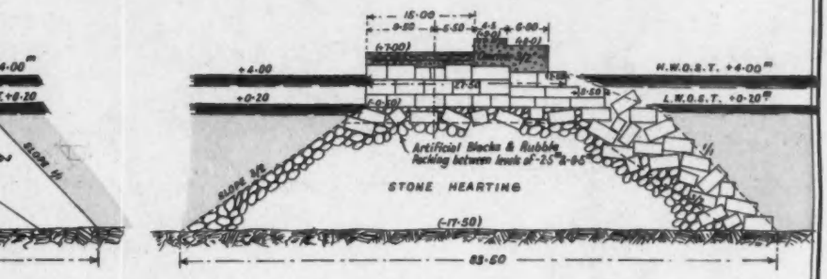
TYPE SECTIONS OF TRANSVERSE BREAKWATER.

WARD & FOXLOW LTD. (LITHOS). 19, MARCOURT STREET, W.1.

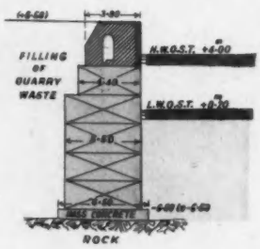
FROM 2250M TO 2350M
UNDER WATER SECTION UP TO -2·50M



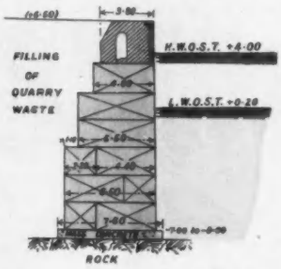
FROM 2000M TO 2250M



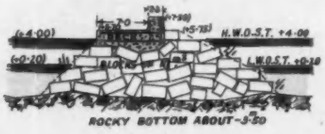
FOR DEPTH FROM -6M TO -6·50M



FOR DEPTH FROM -7M TO -8M.

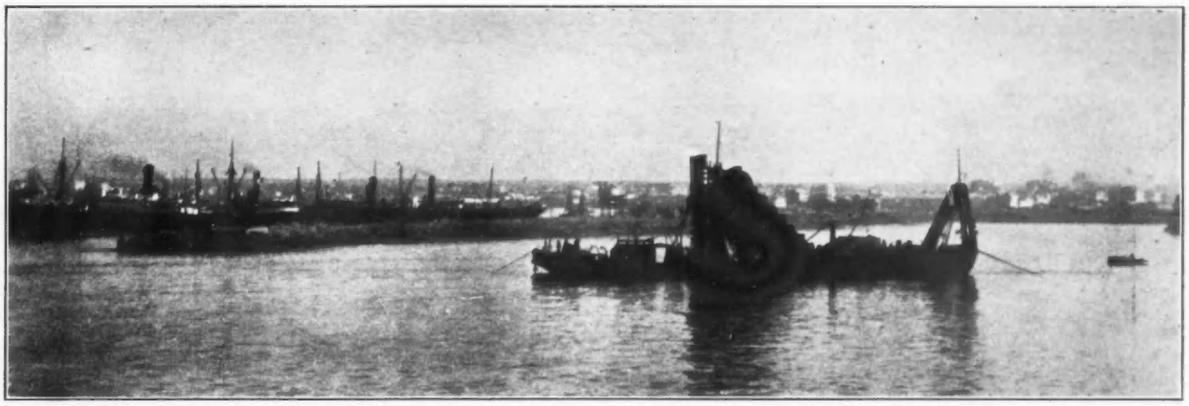


QUAY ON MAIN BREAKWATER.



TYPE SECTION OF THE TWO JETTIES OF THE INNER BASIN.

The Port of Casablanca



Photo] *Dredger at work.* [Cassuto, Casablanca

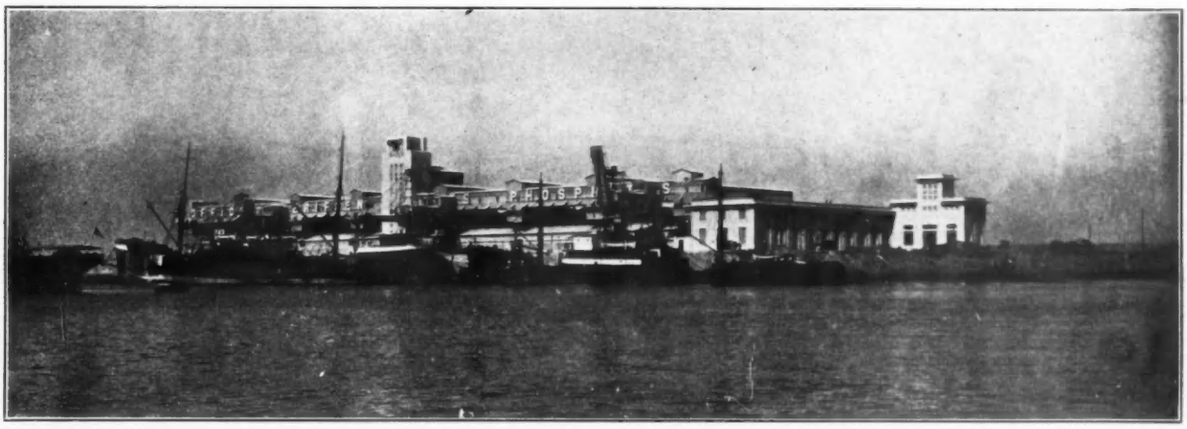
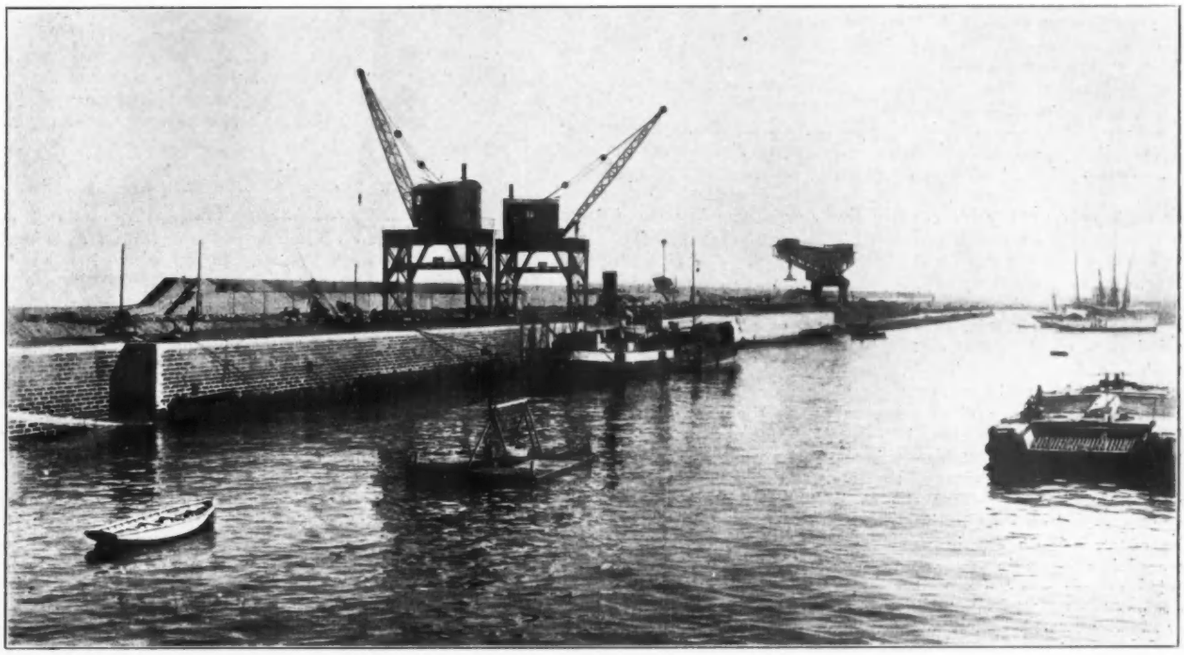


Photo *The Phosphate Works and loading wharf. General view.* [Cassuto, Casablanca



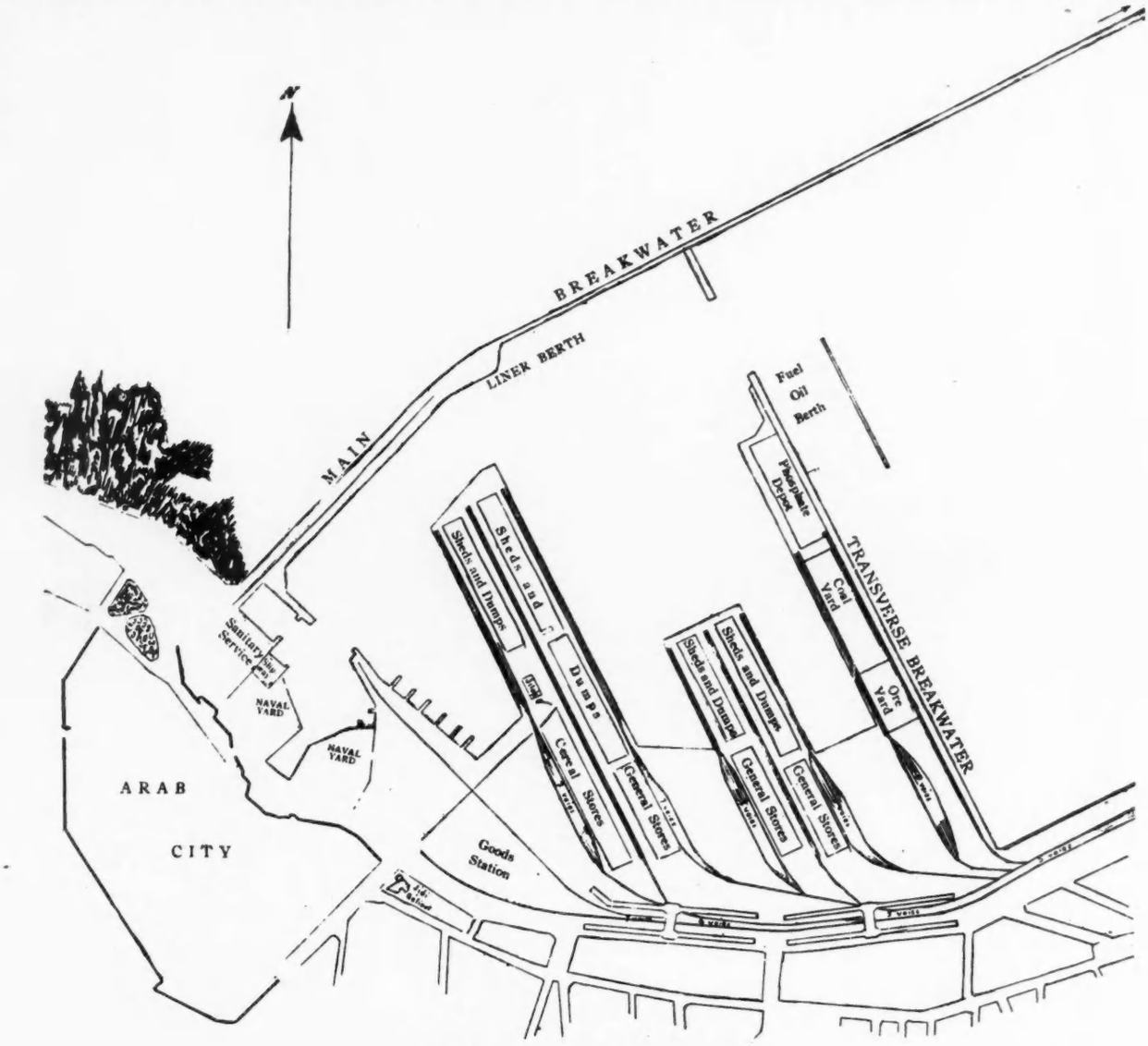
Photo] [Schneider & Co., Casablanca

First quay of the main breakwater (24th August, 1921). In front, two cranes loading stones for the hearting. In the distance, 110-ton electric titan proceeding with the construction of the quay begun.

The Port of Casablanca—continued

work of selection, the stones being classed according to weight and carried to the port by railway. The output of stone from this quarry has attained 1,800 tons a day. The power used amounts to 250 k.v.a., and current is supplied in the same form as at Maarif.

Zenatas Sand Pits.—It was as difficult to find sand as stone in the immediate neighbourhood of Casablanca, and sand dunes



The Port as it will be when completed.

promising an abundant supply of easy extraction for filling were only found at 15 kilometres to the north-east, at a place called the " Zenatas." The sand is extremely fine, and it has the additional defect of being more calcareous than silicious, so that it is of poor quality for construction purposes. It was at first obtained by excavation and a steam navvy, but this was subsequently given up for hand excavation only. Since 1929, however, Pinguely electric shovels, which seem to give satisfaction, have been used. The daily production of the pits has reached 2,000 cubic metres. Electricity is supplied by a 3-phase 50-period current of 22,000 volts, reduced on the spot to 550 volts. The consumption is 160 k.v.a.

Block Yard.—A yard for the making of artificial blocks must obviously be located as close as possible to the root of the breakwater under construction, but the Arab town came down to the water's edge, and at high tide the walls were washed by the waves. It was necessary, therefore, to create the land required by reclamation from the sea. This long and costly process recovered an area 700 metres long by 400 metres wide.

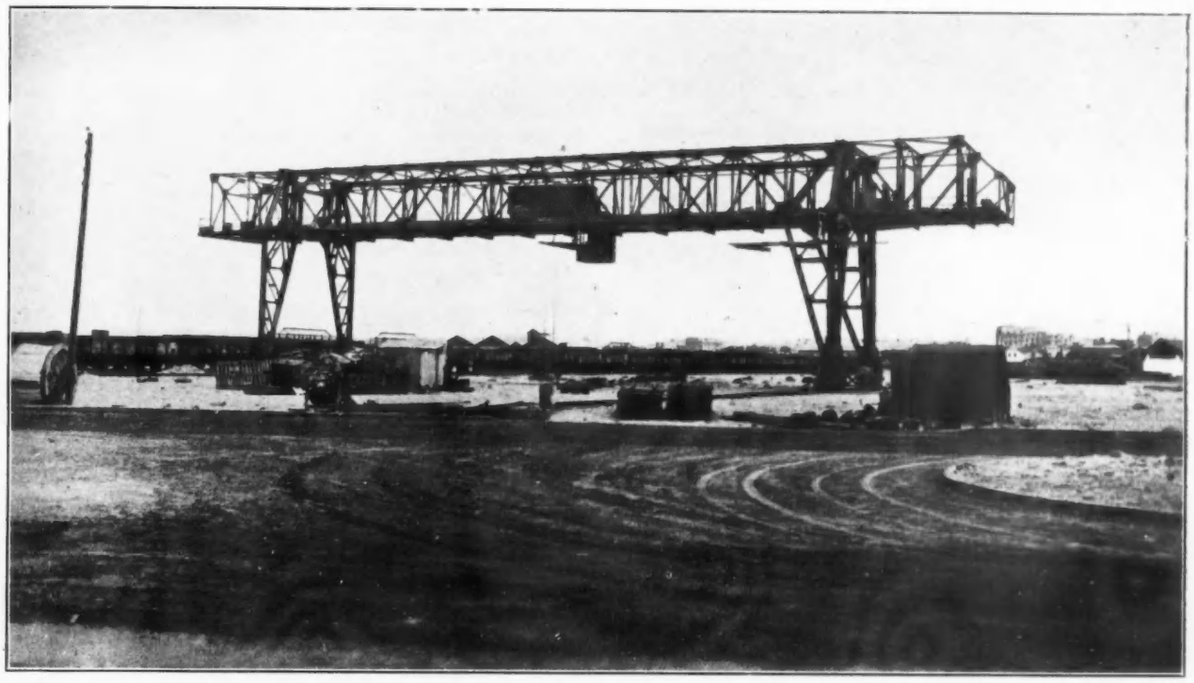
The construction plant in use is made up of four Wilson mixers giving 20 cubic metres per hour, two Anker mixers of 12 cubic metres per hour, and one Smith mixer of 10 cubic metres per hour. The whole of the plant is but seldom in use together, and one or two items are generally standing idle for purposes of overhaul.

As the machinery is required to work without stopping, it is fed from bins supplying respectively sand, broken stone and cement. An inclined plane brings the sets of wagons immediately over the bins so as to load them up. Between the bins and the concrete mixers are endless worm conveyors and revolving cylinders which regulate the mixture in accordance with the requirements of the specification. Water comes in a thin jet in order to ensure very dry concrete. From the mixer the concrete is poured into skip wagons of 1 cubic metre capacity. A 5-ton crane unloads these into prepared forms or moulds in which the concrete is carefully rammed. The forms are struck after a few days, but the blocks are not used until a minimum curing period of 30 days has elapsed. The blocks are lifted and carried by means of two travelling gantry cranes, one steam-driven of 5-metre radius and 100-ton lift, and one with electric drive of 26-metre radius and a lift of 50 tons. Concrete is in the proportion of 2 volumes of stone to 1 volume of cement, or 3 of stone to 2 of cement, according to the use it is intended for. Mortar is in the proportion of 450 kilos of cement per cubic metre of sand, crusher sand and sea sand being mixed in the proportion of 3 to 2. The blocks are of varying sizes, those mostly used being 90, 45 and 25 tons in weight. The block yard's consumption of electricity is 200 kilowatts, which is supplied by direct current at 500 volts.

The Railway System of the Undertaking.—The quarries, the block yards and the works under construction are connected by a metre-gauge railway system of about 80 kilometres of track. The rolling stock comprises 35 locomotives and 900 wagons, the upkeep of which is effected entirely in the contractors' workshops. The train service has been so organised that regularity of supply is ensured at all points, so that there can nowhere be accumulation of materials entailing the costly operation of double handling, whilst other yards are without supplies. Such a service has only been obtained by means of fixed time-tables and of a thoroughly well-trained staff.

Methods of Construction.—The main breakwater has been constructed by working ahead for a distance of 1,200 metres. This is in fact the only suitable method for such work on such

The Port of Casablanca



Photo] *Travelling gantry crane of 36-metre span and a lifting capacity of 25 tons, situated at the rear of Delande's Dock.* [Cassuto, Casablanca

Photo] *The Phosphate Wharf: a steamer loading.* [Cassuto, Casablanca

The Port of Casablanca—*continued*

Photo] [Schneider & Co., Casablanca

General View of the Blockyard. In the distance, on the right, the 50-ton travelling gantry crane.

a dangerous coast as that of Morocco. It was only in 1919, when the Sidi Abderahman Quarry was opened up, that it became possible to combine the use of floating plant with the shore plant. The latter was made up of two titan cranes: one steam-driven of the Fives-Lille make, capable of lifting 110 tons at 10 metres, or 25 tons at 37 metres radius; and an electric one of Schneider-Pinguely make, capable of lifting 110 tons at 13 metres, or 24 tons at 43 metres radius. These two cranes travel upon two tracks of metre-gauge, each rolling on 32 wheels. A running track passes under their portals for special wagons to feed them with blocks. These powerful machines have made possible the completion of the main breakwater to full section, and each of them has deposited up to sixty 45-ton blocks per day. Since 1919 the underwater section of the breakwater, built with quarried stone, has been constructed from the sea by means of hopper barges or tipping barges; the super-structure and the wharf walls have been built by the titan cranes.

The lee breakwater was constructed in the same manner. A steam titan crane, capable of lifting 25 tons at 17 metres radius, was employed there.

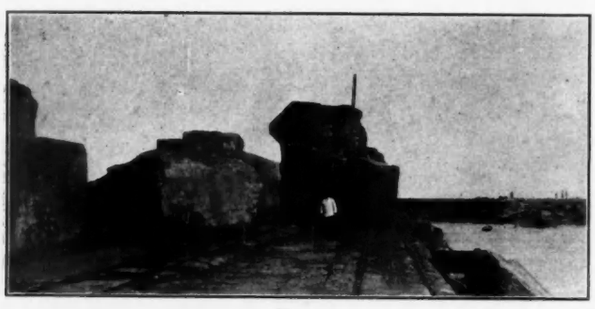
The filling for the reclamation behind the walls is brought by trains of tipping wagons. The track is laid along the extreme edge of the bank, so that the tipping of the material automatically ensures its advancement, very little hand labour being required. On the other hand, frequent alterations of track are necessary, but the gangs are well trained for this and carry out not only slewing, but even taking up and relaying with remarkable speed.

The wharf walls are constructed by means of floating sheer legs, two of which are in use. They are steam-driven and capable of lifting 50 tons and 150 tons respectively.

The preparation of the under-water trench foundations for the wharf walls and the deepening of the basins are carried out by the Public Works Department. The Department has available for the purpose 3 rock-breakers, 3 dredgers, 4 hopper barges and a floating derrick.

The rock-breakers are of British make (Lobnitz); they consist of steel pontoons 33 metres long by 10 metres wide, and are provided with a tripod mast carrying the breaking gear. The breaker itself consists of a steel cylinder with a conical point. It is 8 metres long, weighs 15 tons, and drops from a height of 3 metres. It is automatically lifted up by a steam winch. These rock-breakers are of 200 h.p.

Of the dredgers, only the " Vega " belongs to the Department. It is a self-propelling hopper dredger, and its engines develop 700 h.p. The two other dredgers, " Hercules " and " Titan," are on hire. They are self-propelling but without hoppers, and their engines are of 900 and 700 h.p. respectively.



Photo] [Cassuto, Casablanca

The violence of the sea at Casablanca. Parapet wall of the main breakwater, damaged by wave action. One block was carried away to a distance of about 15 metres.

They are attended by 4 hopper barges of an average capacity of 300 cubic metres.

The derrick is a small floating crane of 15 tons fitted with a grab. Its shallow draught enables it to complete dredging operations in places difficult of access for the larger dredgers.

V- -The Working of the Harbour

After this outline of the harbour works and of their construction, we have to consider how ships enter and are enabled to carry on therein the operations required.

Navigation Lights.—In the day-time there are numerous leading marks visible to guide ships entering the port, such as minarets, towers, chimneys, etc. By night, navigation lights, are brought into use.

On the south-west, on the rocky point of El-Hank, a second-class light (200,000 candle-power) has been erected. It shows a white light occulting, the flashes being in groups of three every 15 seconds. It has a range of visibility of 20 miles, is of Barbier, Benard and Turenne make, and lighted with petroleum.

On the north-east, the Black Rocks (" Roches Noires ") are indicated by a small electric light, occulting, of 400 candle-power (light 3 seconds, darkness 1 second, range 6 miles), of Sauter Harlé make. This light is provided with a red sector of 39 deg. 29 min. For the remainder of its opening it shows white. The north-western limit of the red sector passes through a white light mounted on a buoy which marks the toe of the submerged slope of the main breakwater mound. The harbour entrance is indicated by a green light and a red light fixed upon pylons. These two lights are occulting ($\frac{1}{2}$ second of light and $2\frac{1}{2}$ seconds darkness). They have a range of 4 miles; compressed and dissolved acetylene is the illuminant.

This system is completed by two internal fixed lights, red and green, marking the entrance to the inner harbour. A fog-horn operates in thick weather at the El-Hank lighthouse, but is not always adequate for the frequent dense fogs on this part of the coast, and possibly the installation of a radiophone may become necessary in a few years' time.

Photo] [Schneider & Co., Casablanca

Blasting for a fall of 40,000 tons at the Sidi-Abderahman Quarry.

Pilotage and Moorings.—From the moment that a ship comes in sight of the harbour, a port pilot takes charge of her—for pilotage is compulsory—and after boarding steers her to the moorings assigned by the harbour master. Ships can be moored alongside wharves or remain at anchor or tied up to the moorings provided at intervals.

Lighterage.—When ships are not moored alongside wharves their loading and unloading takes place from or into lighters called " barcasses," which are brought to the wharves by tugs.

When, on the other hand, ships are moored alongside, the loading and unloading are effected by the quay cranes or by the ship's own tackle. It is naturally this method of loading and unloading alongside which is coming more into operation as fast as the progress of construction advances, owing to its greater speed and safety.

By the end of 1931, ships had at their disposal some 2,800 metres of wharves with a depth of 9 metres at low tide.

The lighterage operations are in the hands of a company holding a concession for the work, under the control of the Public Works Department, and called " La Manutention Marocaine."

VI—Equipment of the Harbour

The Port of Casablanca has at its disposal, for manœuvring ships as well as for the towage of lighters and other craft, twelve tugs of capacity varying from 150 to 1,000 h.p. The lighters used for loading and discharging cargo number 75, and vary in capacity from 25 to 160 tons. There are in addition four fresh water tank barges, a fire-fighting float and an insubmersible lifeboat.

(continued on page 159)

EXCAVATORS

TRENCHES, SEWERAGE, FOUNDATIONS ETC.

QUARRIES ETC.

CLAY PITS AND LARGE OPEN CAST MINES.

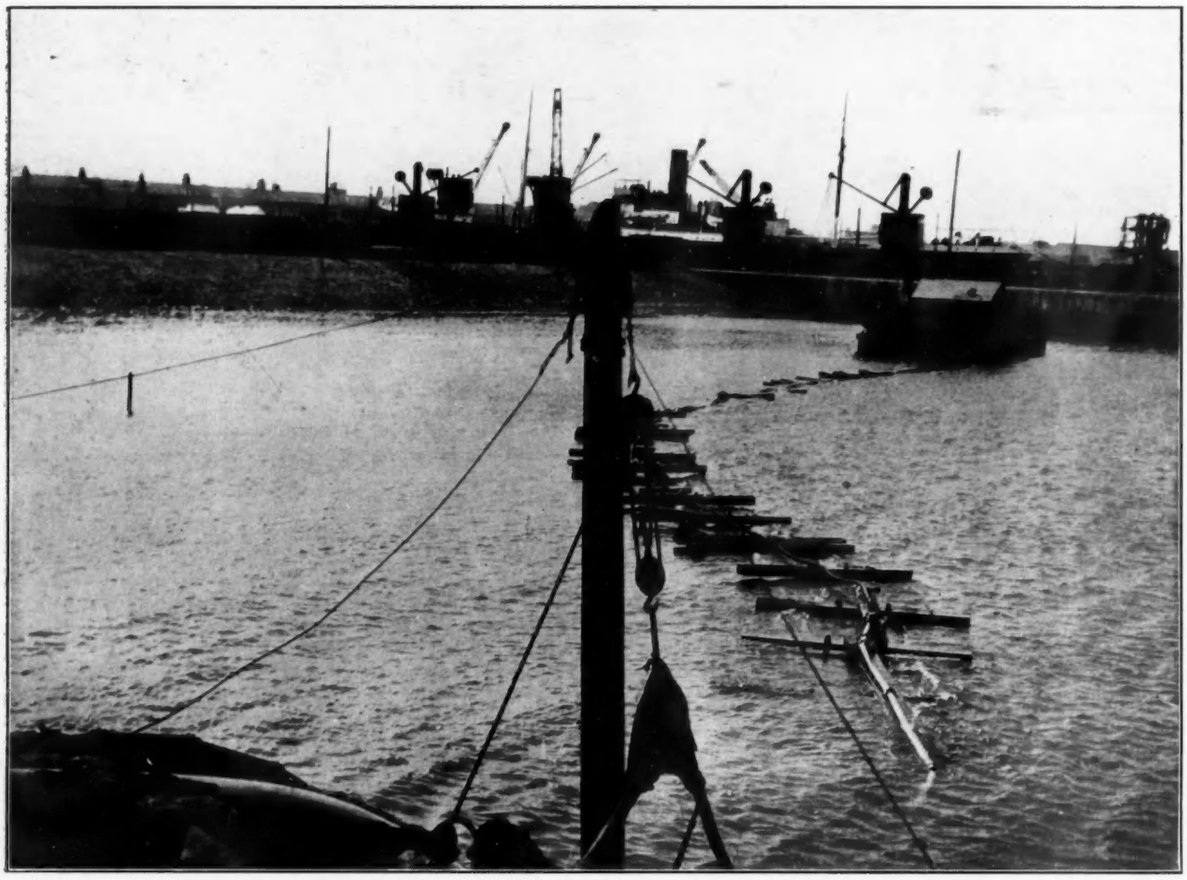
DRAINAGE & IRRIGATION.

CEMENT WORKS ETC.

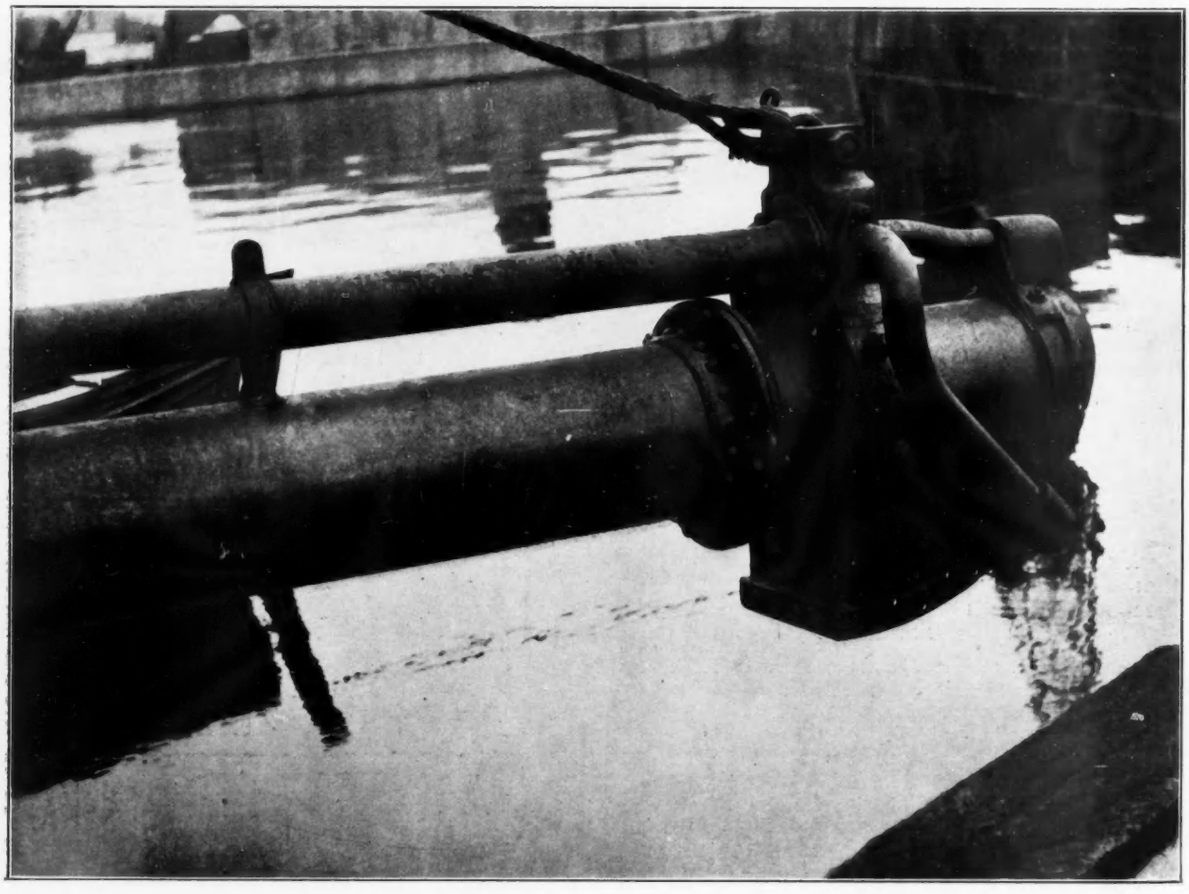
DOCKS & HARBOURS ETC.

RUSTON-BUCYRUS

Ardrossan Harbour

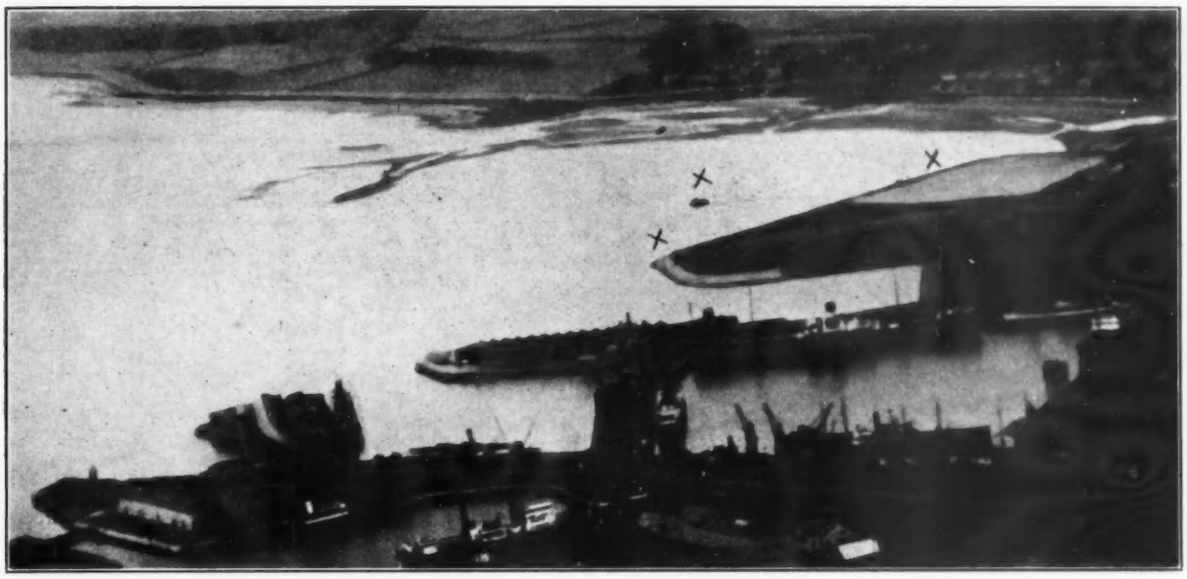


Pontoon Suction Dredger "A.H. No. 5." Floating Pipeline.



Pontoon Suction Dredger "A.H. No. 5." Suction Nozzle and Agitating Jets.

Ardrossan Harbour: Reclamation of Twelve Acres of Land



Aerial View, Port of Ardrossan, showing Reclamation Scheme (marked by crosses) with Suction Dredger at work.

IN the year 1928 the directors of the Ardrossan Harbour Company decided to proceed with a scheme for the general improvement of the port. The advent of a new traffic in petroleum spirit and oil required the provision of accommodation for larger vessels, and further accommodation for works adjacent to the docks was also required.

Plans were adopted and authorised by the Board of Trade for the construction of a tidal deep water berth 450-ft. long and 28-ft. deep at low water of spring tides, at the north side of Montgomerie Pier; and, secondly, the construction or reclamation from the foreshore opposite the proposed berth and alongside a depot leased by the Shell-Mex Company of an area of approximately 12 acres; the two schemes to be constructed simultaneously, dredgings from the foreshore and in the vicinity of the deep water berth to be used for filling and to assist in keeping the berth clear of silt.

This article describes the reclamation part of the scheme, particularly the method of construction and some of the difficulties that had to be overcome.

The principle of construction was to build a retaining embankment of loose stone or slag, describing the shape of the finished area, blinding this on the inside with some fine material and filling up the enclosed area with sand, supplied from a suction dredger working on the foreshore and connected to the shore by pipe-line.

From the plan (Fig. 2) it will be noticed the position of the area in relation to high and low water marks, the shape that is designed to offer least resistance to the prevailing weather and its availability to present works, sidings and road connections.

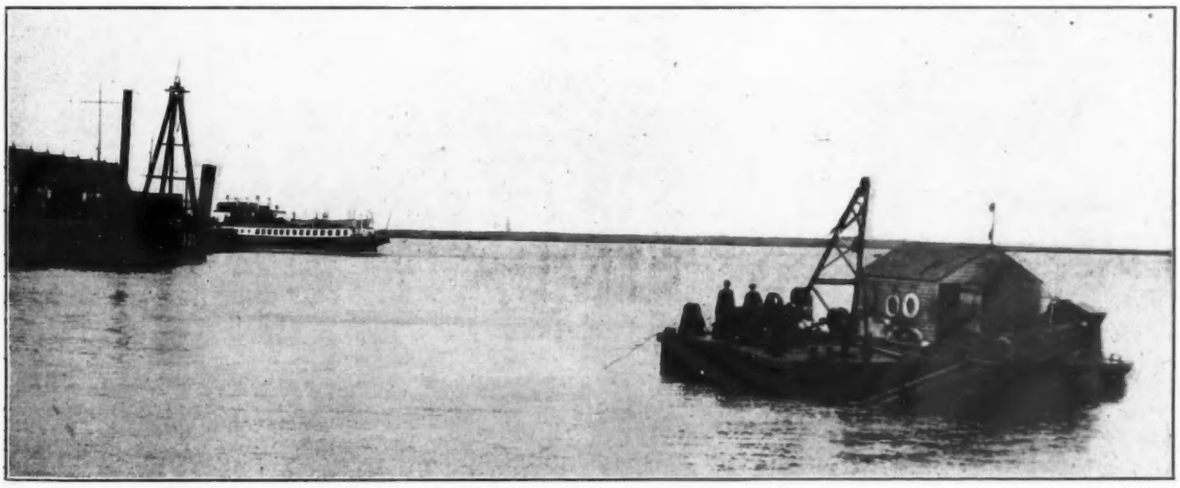
The work was carried out departmentally by the Harbour Authority under the supervision of their chief engineer.

Borings taken on the foreshore for foundations showed the depth of sand to vary from 9 to 15-ft. Below this some thin layers of clay were found over the volcanic inclined strata of rock. Before the scheme was commenced an existing drain, which terminated inside the proposed area, was lengthened, and a manhole added and built up to the finished level; this to save considerable excavation at a later date.

A line of piles or fir poles 26-ft. by 8-in. diameter at small end were driven down to the rock 8-ft. apart and round the outside edge of the area, this being boarded up with 3-in. fir planking to about 3-ft. from the finished level (see cross section Fig. 1 of retaining embankment).

The pile driving equipment was erected on a rectangular pontoon 37-ft. by 25-ft., and included a No. 7 McKiernan-Terry steam hammer.

The construction of the embankment followed, which consisted of lumpy slag tipped from end door wagons by means of special apparatus, the tipping being done by a 5-ton loco shunting crane. The " tipper " was a steel girder structure some 30-ft. long which was passed under the rear axle and clipped on to the front axle of the wagon, the other end being lifted by the crane. A certain amount of slag was allowed to run round the piles and boarding so as to totally enclose both the piles and the boarding in the embankment. With this method an advance of 12 to 16-ft. was made per 8-hour day. In order to consolidate the toe of the embankment against sea action and the possibility of sand being taken away by dredging operations in the vicinity, short lengths of universal steel sheet piling, 8-ft. long, were driven 6-ft. into the sand, leaving the projecting 2-ft. to make a good foundation for the layer of pitching stones and blocks. This was only found necessary alongside the face exposed to the entrance between



Pontoon Suction Dredger " A.H. No. 5."

Ardrossan Harbour—continued

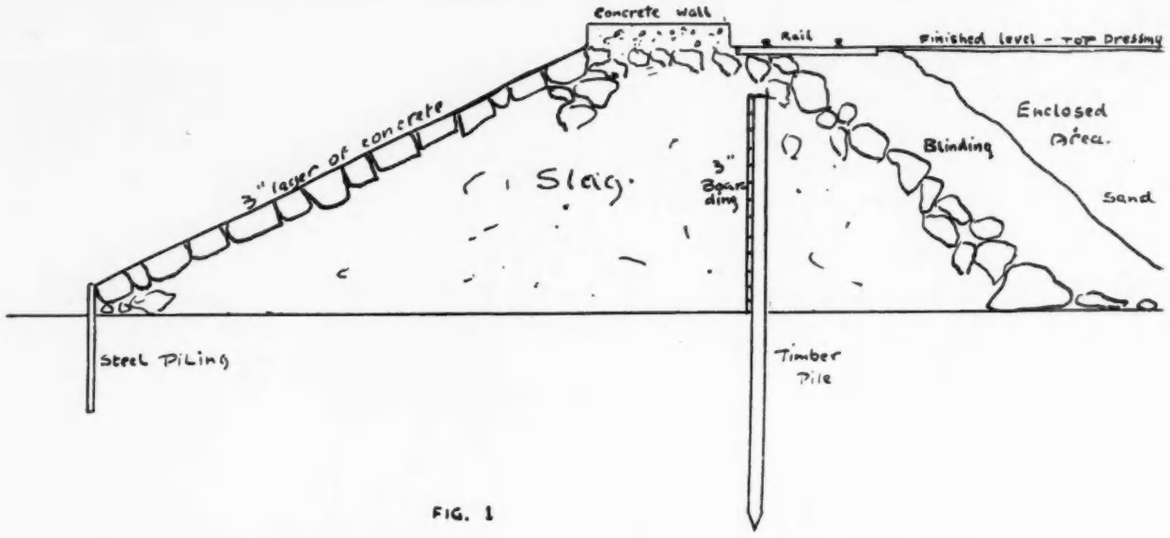


FIG. 1

the breakwater and the lighthouse. The above section was hand pitched or built with old masonry blocks obtained from demolished buildings, etc., and from the old pitching originally inside the area and which was lifted prior to becoming covered with the filling. The whole of this was grouted and surfaced with concrete which gave a finished slope of 2 to 1. Above this section a concrete wall was built 2-ft. above ground level. It was made 9-ft. wide and had the effect of keeping down any exceptional sea. The railway line was shifted to the back of this wall along this section. The remainder of the embankment was not pitched, but left with a natural angle of 1¼ to 1, as in accordance with the plan approved by H.M. Board of Trade.

The whole of the inside slope of the embankment was sealed or blinded with fine material, grabbed from railway wagons and deposited to a thickness of from 2—4 ft. The material used consisted of ashes, soil, railway cleanings, etc. Before the surrounding embankment was completed the "filling in" was started at the finished end, and this was accomplished by means of an electrically driven suction dredger working afloat outside the area, the discharge of which was connected to the embankment by floating pipe-line.

The equipment on board the dredger was mounted on the pontoon which was used for the pile driving equipment, that gear having been removed. The pumping machinery consisted of a 12-in. sand pump with 10-in. discharge, driven by a 175 h.p. squirrel cage pipe-ventilated motor working on 3 phase 440 volts 50 cycles and controlled by a star-delta starter. This was assisted by a sand agitator pump, a 2 stage high pressure pump driven by a 30 h.p. totally enclosed squirrel cage motor and operating 3 one-inch jets working at the mouth of the suction hood. These jets were suitably arranged to squirt upwards and sideways, this arrangement being found more suitable than working in a forward and inward direction. This high pressure supply also operated an exhauster for priming the sand pump. The two pump motors and their respective starters were housed in a weatherproof shed, which also gave the crew accommodation for cooking, etc. The pumping was suspended at week-ends and a day's work consisted of three shifts of 8 hours each, the men spelling each other off for meals aboard. Three men formed an adequate crew. The suction arm was suspended from a fixed jib and raised and lowered by an electric winch, equipped with warping barrels. Other hand winches were fitted and used also for mooring wires. The pipe-line consisted of 38-ft. by 10-in. diameter lengths of riveted steel pipe fitted with two cope rings welded on to each end, and connected by means of spiral wire reinforced leather joints and secured by two clamping bands at each end.

The original principle of operation as recommended was to dig a series of "craters," and so the jib was made to luff in order to increase the size of these craters, and to minimise the amount of shifting. The original pipe-line and electric cable shore connection lay along the surface of the sand. Both had to be trailed when shifting became necessary, and after about 3 or 4 hours' working became buried and had to be dug out by hand at low water and shifted to the new position. This arrangement necessitated starting pumping operations with a maximum working radius and decreasing the length of pipe-line from time to time by extracting lengths. In the course of working the trailing cable was liable to become entangled in the pipe-line.

The depth of sand obtainable varied from 9 to 14-ft., was exceptionally hard and had a natural undisturbed angle of something approaching the perpendicular.

It was found that the agitator jets could have been made much more powerful, which would have had the effect of increasing the size of the crater dug. As it was with a 30-h.p. motor pump working at 75 lbs. per sq. in., craters were formed 14-ft. deep by 10-ft. wide at the top and probably 8-ft. wide at the bottom.

The above method of working proved to be very unsatisfactory, so a trial was given to floating the pipe-line and cable. After experimenting with various kinds of floats, the most satisfactory method was found by laying the pipe between 2—14-in. by 14-in. logs and bolting across top and bottom with railway sleepers. The electric cable was laid down the centre and kept above water. The pipe joints were altered from leather as described to non-reinforced 8-ply rubber by 9-ft. 9-in. long, secured by 2 clamping bands at each end. These carried a water pressure of 25 to 30 lbs. per sq. in. and gave much better service than reinforced leather. This improved method permitted the dredger to travel through a semi-circular path of almost 180 deg. and to cut long trenches with the floating pipe-line as a radius. Instead of commencing a cut with a long pipe-line a beginning was made with a short pipe-line, and as the cut extended extra lengths of pipe were added. This formed a hole in which the pump floated and

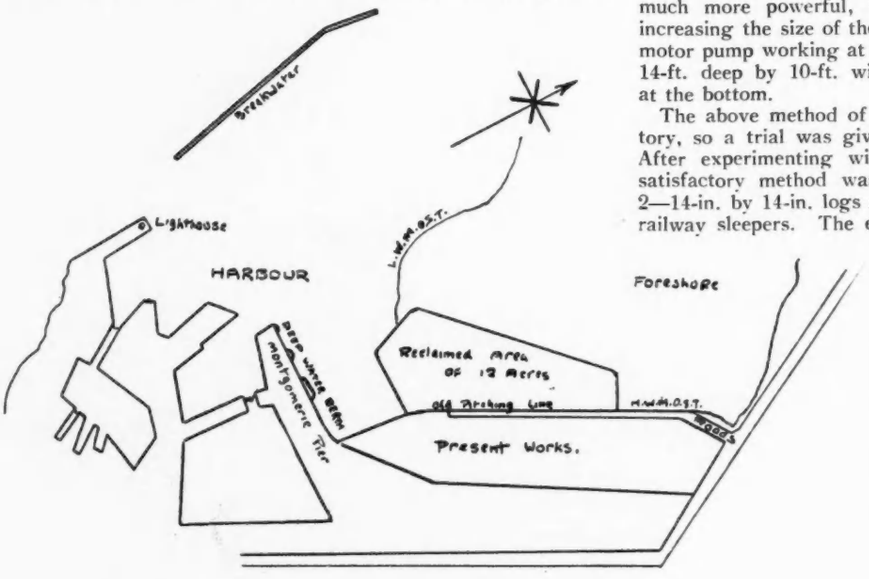


FIG. 2

Ardrossan Harbour—continued

worked at low water, cutting into the bank left by the preceding cut.

It was found necessary to have a sample cock on board the dredger and the best method was obtained by fitting a suitably bent pipe to the pump discharge elbow. This was always in use, so that the operator could constantly see the quality of the spoil and work the dredger accordingly. The maximum working radius that was obtained in this case was 700-ft. from the embankment, and this was coupled to a 400-ft. length of discharge connection. This method of working increased the possible hours of pumping from 9 to 20 per 24-hour day, and the average quantity of spoil pumped increased from 50 to 80, or over 100 tons of sand per hour, thereby reducing the working cost to 1⅛d. per ton.

During the winter months the dredger was docked and laid up. The gross time taken by the dredger amounted to 2 years 8 months, and the net time taken was 1 year 5 months. The finished area contained 512,000 tons of sand.

The discharge end ashore was advanced as the filling went on by the addition of pipes and wooden chutes. By moving the mouth of this discharge, the ground was levelled off sufficiently as it was completed, and the blinding material on the inside slope of the embankment allowed the water to escape without the loss of any sand, but as the finished area became restricted it was found necessary to provide overflow pipes.

The filling was covered on the surface with a layer of 3-in. of soil or ashes as portions were completed in order to prevent the dry sand from being blown.

The cost of carrying out the work departmentally was £25,314, the lowest indication of cost obtainable from contractors being £28,416.

North-East Coast Notes.

Two Factors of Hope.

THERE are two outstanding facts connected with the trade of the North-East Coast which gave extreme satisfaction in that area during February. The first was a further and very marked decrease in idle tonnage, and the other was the placing of a few shipbuilding orders.

Mr. Richard Aughton, general manager of the Tyne Improvement Commission, in conversation with a Newcastle journalist, said there was undoubtedly a distinct improvement in the shipping position in the Tyne. "Tonnage is a much better indication than number of ships," he said. "It would be possible for quite a considerable number of small ships to leave the river without making an appreciable difference in the tonnage position. It is gratifying to note that the reduction from 180 (last August) to 131 vessels now, represents a tonnage reduction from 390,935 tons to 286,561 tons. This reduction by 104,374 tons is more than a quarter."

Many of the ships represented by this figure have gone into service, and others have been broken up or sold to foreign owners.

More activity in the shipyards and less idle tonnage means more grist for the mill of the Tyne Improvement Commission, and it is interesting to note that, speaking at the meeting in January of that body, Mr. Francis Priestman, in presenting the report of the Finance Committee, said that when he reviewed later the trade and financial operations of the Commission in 1932, the record, he thought, would be found to be pleasing, notwithstanding the reduced volume of trade and a still further fall in revenue.

Problems of Coal Shipments.

At the January meeting of the Tyne Improvement Commission the Docks and Trade Committee recommended that the attention of the Board of Trade be drawn, in appropriate terms, to the decline in the shipment of coal and coke from the port in 1932, compared with the years 1913 and 1929, and that a copy of the detailed statement which had been prepared should be forwarded to the Board. This course was approved.

Mr. R. S. Dalgliesh, the chairman of the Docks and Trade Committee, said that coal shipments from the river last year were better than seemed likely in July, when they did not seem likely to reach 12¼ million tons for the year. That they had reached 12¾ million tons for the twelve months was all to the good, but it was a very poor figure. The Commissioners' docks had not maintained the position which they looked like securing some months ago. The figures of coal exports in 1932 showed badly against those of 1913 and 1929, and they were to be sent to the Board of Trade so that it could consider them in relation to the attitude of this country in its trade relation with other countries and the bargaining powers which tariffs had given. This country, and Tyneside in particular, he pointed out, was a very large customer of Spain, and the balance of trade was substantially in favour of Spain. In 1913 nearly one million tons of coal were shipped from the Tyne to Spain, whereas last year the quantity had dropped to one-tenth, while over 80 per cent. of the iron ore required in the district came from Spain. It was not unreasonable to ask the Board of Trade to survey the position not only from the standpoint of national and international trade balances, but from the standpoint of the district which was such a large customer.

A Striking Analysis.

The statement to be sent to the Board of Trade, which was of a very detailed character, showed that, as compared with 1929, there had been smaller quantities of coal and coke sent in 1932 to 38 countries, including Germany with a falling off of 1,184,776 tons; Belgium, with a decrease of 1,398,710 tons; France, 1,442,796 tons; Italy, 972,216 tons; Spain, 387,654 tons; Algeria 500,237 tons; Holland, 471,920 tons; Norway, 119,257 tons; Sweden, 154,796 tons; and Egypt, 82,048 tons. Altogether there had been a decrease in shipments of 6,954,318 tons, of which 6,418,008 tons represented foreign decreases.

The increases to 16 countries included: 138,279 tons to British America, 99,108 tons to Finland, 75,281 tons to Gibraltar, 70,618 tons to Denmark, 964 tons to Iceland, 4,024 tons to Latvia, 28,455 tons to South Africa, 8,784 tons to East Africa, 5,734 tons to West Africa, 2,503 tons to Mauritius, 199,722 tons to West Indies, 149,101 tons to Argentina, 63,436 tons to Australia, 24,877 tons to New Zealand, and 24,284 tons to Lithuania. The report indicated that excepting the war and strike years, 1932 was the worst year on the Tyne for coal and coke shipments since 1896, when the total was just under 12,000,000 tons. The total for 1932—12,776,273 tons—compared with 13,958,701 tons in 1931.

Canadian Cattle Trade.

Mr. Dalgliesh, at the same meeting, further pointed out that all restriction on the import of Canadian cattle had been removed and that everything possible should be done to attract a share of this trade to the river. The cattle could be landed on the open quay and without any quarantine period before their removal. At one time there was a large Canadian cattle trade to the Tyne. It was agreed that Alderman Lee, Mr. R. S. Dalgliesh, and the Chairman of the Commission (Mr. H. P. Everett) should talk over the possibilities of this trade locally.

The decision of the Finance Committee of the Tyne Improvement Commission to recommend the Board to make no further grant to the Tyneside Industrial Development Conference was challenge at the meeting, but a proposal to give £250 or £500 was negatived, and the Committee's suggestion was adopted.

Year's Trade on the Wear.

Having regard to the intense world-wide depression experienced during 1932, the annual trade report issued by the River Wear Commission cannot be regarded as really unsatisfactory. Truly there were decreases recorded generally, but the figures were not nearly so disappointing as one might have expected. During the twelve months 2,590 vessels of 2,173,017 tons cleared from the port, and the tonnage rates amounted to £62,491. These figures compared with 2,966 vessels of 2,367,577 tons in 1931, a decrease of 376 vessels and 194,560 tons. Coasting trade diminished by 105,785 tons, European trade by 142,869 tons, while the trade beyond Europe increased by 54,094 tons.

The principal imports were: Timber, 17,520 loads against 15,501 loads in 1931; props, 71,891 loads against 61,730; iron and steel, 2,974 tons, compared with 7,330 tons; iron ore, 6,602 tons against 17,085 tons; grain, 23,310 qrs. against 44,984 qrs.; esparto, 19,370 tons against 18,602 tons; wood pulp, 5,447 tons against 3,775 tons; petroleum, 65,648 tons against 87,620 tons; cement 17,060 tons against 21,923 tons; sundries, 60,602 tons against 68,168 tons.

In the exports, coal and coke, of course, lead the way, the shipments totalling 4,532,782 tons, a decrease of 472,768 tons on 1931. Other exports were: Petroleum, 18,353 tons against 24,108 tons; iron and steel, 1,518 tons against 2,853 tons; machinery, 1,059 tons against 3,191 tons; pitch and tar, 11,335 tons against 21,470 tons; and pit-props, 5,070 loads against 2,648 loads.

Hull and the Humber

Amendments to the Humber Bridge Scheme.

AS briefly intimated in the last issue of *The Dock and Harbour Authority*, the scheme for a road bridge over the River Humber between Hull and North Lincolnshire has been considerably amended with a view to meeting the objections of the shipping and mercantile interests, who have been, and still are, seriously alarmed at the possible effects upon the navigable channel and the approach to the West Riding Port of Goole. The estimated cost at the same time is reduced from £1,790,000 to £1,500,000. In a report presented to the Hull Corporation, the sponsors of the Humber Bridge Bill submitted to Parliament, it is stated that in order to reduce to the greatest possible extent the capital expenditure upon the proposed bridge, the consulting engineers have had under consideration the means of effecting such reduction, and as a result of their investigations two important new factors have been taken advantage of in a proposal which Sir Douglas Fox and Partners have now brought forward. These two factors are the introduction of a new form of high tensile steel and the availability of certain cables and other materials used in the construction of the Sydney Harbour Bridge, and available at a low price. This has made it possible for the engineers to recommend an entirely new form of structure which can be constructed at a lower price and at the same time meet many of the objections levelled at the original proposal. The new structure proposed is of a suspension type and would involve the placing in the river of seven piers only, instead of fifteen, the width of each span between the piers being 924-ft. The minimum reduction in the original cost by adopting this method of construction is £50,000.

One of the principal objections brought against the scheme as first submitted was the danger of heavy contingent liabilities falling on the Bridge Board in the event of the 15 piers in the river affecting the navigable channel, and also the further danger of the navigable channel itself shifting from natural causes in such a way that it no longer continued to flow between the main span of the bridge. It was suggested that if this main channel altered it might be necessary for the Bridge Board to expend large sums of money in training walls or other river works in order to stabilise the navigable channel under the mains span of the bridge. In the report from which we quote it is contended that the change in the method of construction of the bridge puts a completely new aspect upon the whole matter, because it no longer will be a question of concern to the Bridge Board, even should the navigable channel alter its course. The promoters are advised that even under the previous proposal the 15 piers would have no effect upon the course of the navigable channel, but the reduction in number, it is suggested, will make those risks so remote under the new proposal as to be entirely negligible. The Committee, therefore, are of opinion that in putting the new proposal forward they are submitting a scheme which is so different in character that, although even under the previous scheme they were advised that these contingent liabilities would never come, yet under the new one, for all practical purposes, they can be ignored.

The estimated annual expenditure under the original proposal was £134,000, against an estimated income from tolls of £135,000, thus leaving only a small margin of difference between the two. In other words, if the estimates of Sir Henry Maybury were only very slightly incorrect, some liability under their guarantee might have fallen on the Hull Corporation. Important changes, however, have taken place in the meantime, and it is now found that, taking everything into account, instead of an annual outgoing of £134,000, it is possible to reduce it to £85,000. This is due to two factors, viz., the decrease in the capital cost and the reduced cost of raising the necessary money. It is proposed that the whole of the capital shall be borrowed by the Hull Corporation and lent to the Bridge Board.

The Humber Conservancy Commissioners, who have charge of the river, have in no way relaxed their vigilance or their opposition to the project, and have submitted the new proposals and plans to the Board's engineering experts, Mr. H. A. Reed and Mr. N. G. Gedye, and the Board's engineer (Mr. A. E. Butterfield), for their examination and report. Individual members and shipowners, however, have unhesitatingly expressed their opinions, and regard the project as inimical to the proper navigation of the river and likely to be disastrous to its trade and shipping. The original Bill had advanced to the third reading stage in Parliament, and since then has been subject to much obstruction, and at the time of writing its progress seems doubtful, inasmuch as in material particulars it differs from the original Bill presented. The principle is the same, but the details are altered, and there is no prospect of the Government's offer to guarantee three-fourths of the net cost being revived.

Hull Going Ahead as an Oil Port.

Hull is going ahead as an oil port. Each year extended use is made of the two jetties with pipe-lines connecting with the depot at Saltend, where all the principal companies have installations of storage, refineries, etc. Last year the quantity of petroleum imported was around half-a-million tons, or to be precise 149,526,652 gallons, which compares with 132,830,707 gallons in 1931, and is more than eleven times the quantity received at Hull in the pre-war year 1913. The depot is a progressive feature of the dock system of the port, and the value of this development is enhanced by the availability of pump-equipped tank lighters, owned by local firms, engaged in carrying and delivering to steamers which cannot for various reasons proceed to the jetties for bunkering purposes. Larger types of lighters also convey oil by the inland waterways to Leeds and other cities, and also to Immingham and coastwise destinations.

Progress of River Walls at Confluence of the Ouse and Trent.

At the January meeting of the Humber Conservancy Board information in regard to the progress of the river walls now under construction at the confluence of the Ouse and the Trent, where they join to form the Humber, was invited by Mr. W. Minnitt Good and Mr. J. Bentley Bennett. In reply, the engineer (Mr. A. E. Butterfield) stated that the work was progressing satisfactorily and that he had reported to the Works Committee that the Aire and Calder Navigation, who are jointly concerned in the scheme, were entitled to the fourth and final payment under the Trent Falls Improvement Act, 1926, the amount being £22,934, costs and expenses incurred by them and payable by the Humber Conservancy as their share.

The Thorne Scheme.

Thorne Colliery are experimenting with a new scheme for transporting coal from the pit to the canal at Newbridge, a distance of three miles, for despatch by water to inland destinations. A wharf has been constructed on the canal and coal is being conveyed from the colliery by motor lorries. The object is to save freightage charges. A light railway in present circumstances is considered impracticable. The Thorne scheme is similar to that is operation at Hatfield Main Colliery, with the exception that the latter have the distinct advantage of being only one mile distant from the canal, to which it was easy to lay a light railway.

Unsatisfactory Condition of Whitby Harbour.

Anxiety is felt as to the state of the harbour at Whitby (Yorkshire), and a resolution has been passed by the North-Eastern Sea Fisheries Committee urging upon the Whitby Urban Council as the harbour authority to take steps to improve it and to apply to the Ministry of Agriculture and Fisheries for a grant in aid. Capt. W. W. Milburn, who introduced the matter, said that there was only 18-in. of water in the bar at low tide, and motor boats going in or out had to wait until nearly high water. The lifeboat had a 5-ft. draught, and it meant that it was confined to harbour 10 hours out of the 24, which might prove very awkward in case a vessel was in distress. It was also stated by Capt. R. Thompson that Whitby Harbour was continually getting blocked with mud and sand, and that dredging was imperatively necessary to prevent it being sealed to all kinds of craft.

Immingham Dock Statistics.

During the month of January a total of 113 vessels, representing a net registered tonnage of 143,088, used Immingham Dock, including 16 vessels totalling 33,275 net registered tons using the Western Jetty coaling berth, as compared with January, 1932, when 104 vessels totalling 132,749 net registered tons used the port, including one vessel of 1,498 net registered tons using the Western Jetty.

Explosion at New Dock.

On February 1st, following a violent explosion and several minor ones, a fire broke out in a store belonging to Sir Lindsay Parkinson and Co., Ltd., on the site of the new Grimsby Fish Dock, now under construction. The roof of the store was blown off by the force of the explosions. The cause of the explosions and fire is not known, but as the store contained cylinders of oxygen and acetylene it is assumed that one of the cylinders weakened and exploded, setting fire to inflammable material.

Record Import of Oranges.

The steamship " Ciscar " recently brought a cargo of bitter oranges into Grimsby for Messrs. T. G. Tickler, marmalade manufacturers, consisting of 2,000 cases containing over a million oranges, and this is reputed to be the largest shipment of Seville oranges ever landed in Grimsby.

The Handling of Ore for Export

Plants for Takoradi and Oxelösund

Designed, Manufactured and Erected by Fraser & Chalmers Engineering Works (Proprietors: The General Electric Company, Ltd.), Associated with Robins Conveying Belt Company, New York.

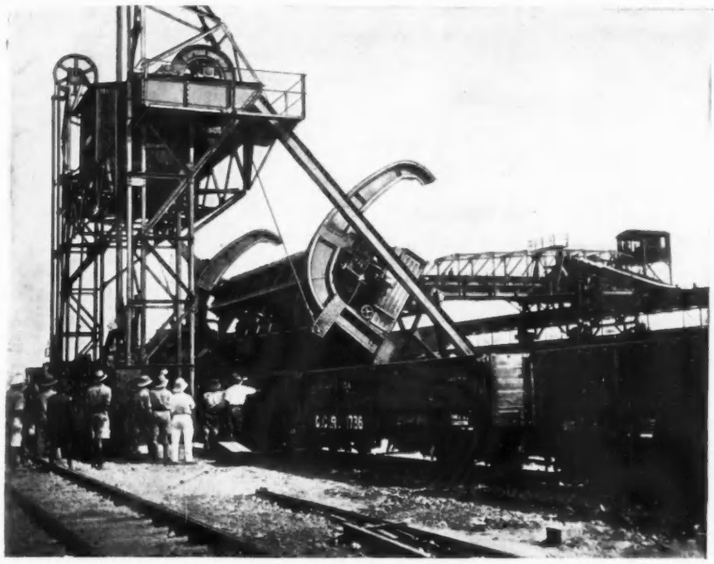


Fig. 1. Wagon Tippler at the Harbour of Takoradi, West Africa, capable of tipping 25-ton trucks.

NOT the least among the many problems to be considered when mining ore for export are those connected with the most efficient and economical means by which the raw or treated material is to be transported to the shipping port and the method of storing and loading into ships.

In most cases the mines are situated at some considerable distance inland and are connected to the nearest port by a railway, or at least a ropeway. At the mines terminal of the railway the handling of the ore involves the loading of railway wagons from a storage pile or bunker, and necessitates the use of one or more conveyors and a system of loading into chutes. This system is intimately bound up with the layout of the general plant of the mine, and is arranged to suit the topographical conditions of the particular site.

At the shipping port terminal of the railway the arrangement and extent of the handling, storage and loading out plant depend entirely upon the nature of the coast line and whether or not existing port facilities are available.

Deep water for ships to lie alongside for loading is the first essential, if the ships are not to lie anchored out in a bay and be loaded from native craft or barges as has been the invariable custom in the past. In the case of virgin terrain, early opportunity should be sought for ascertaining by survey a suitable point where foundations for a jetty can be built and a ship loading jetty constructed. Where a shipping port already exists, however, it is occasionally possible to take advantage of existing facilities at the port by the erection of suitable plant, connecting the port with the mine property by a special railway, or by an extension of an existing railway.

In some cases where such a port has flourished to the extent that the volume and nature of its export business has outrun the capacity of its existing facilities, local prospecting may show that a deep water harbour could, with advantage, be constructed within easy reach of the settlement. In such a case, the need for a new harbour having already been created, powers are obtained for putting in hand the constructional work after due and careful survey has established the most suitable location, extent and type of the harbour, after which the old port either adjusts itself to the new conditions or is gradually merged into the new location.

New and up-to-date cargo handling plant is one of the inevitable corollaries of such a change in existing port facilities, and it is the purpose of the present article to describe both the installation of a complete modern ore handling and shipping plant and an extension of ore loading plant to existing equipment.

The Takoradi Scheme.

The completion in 1928 of the new harbour of Takoradi on

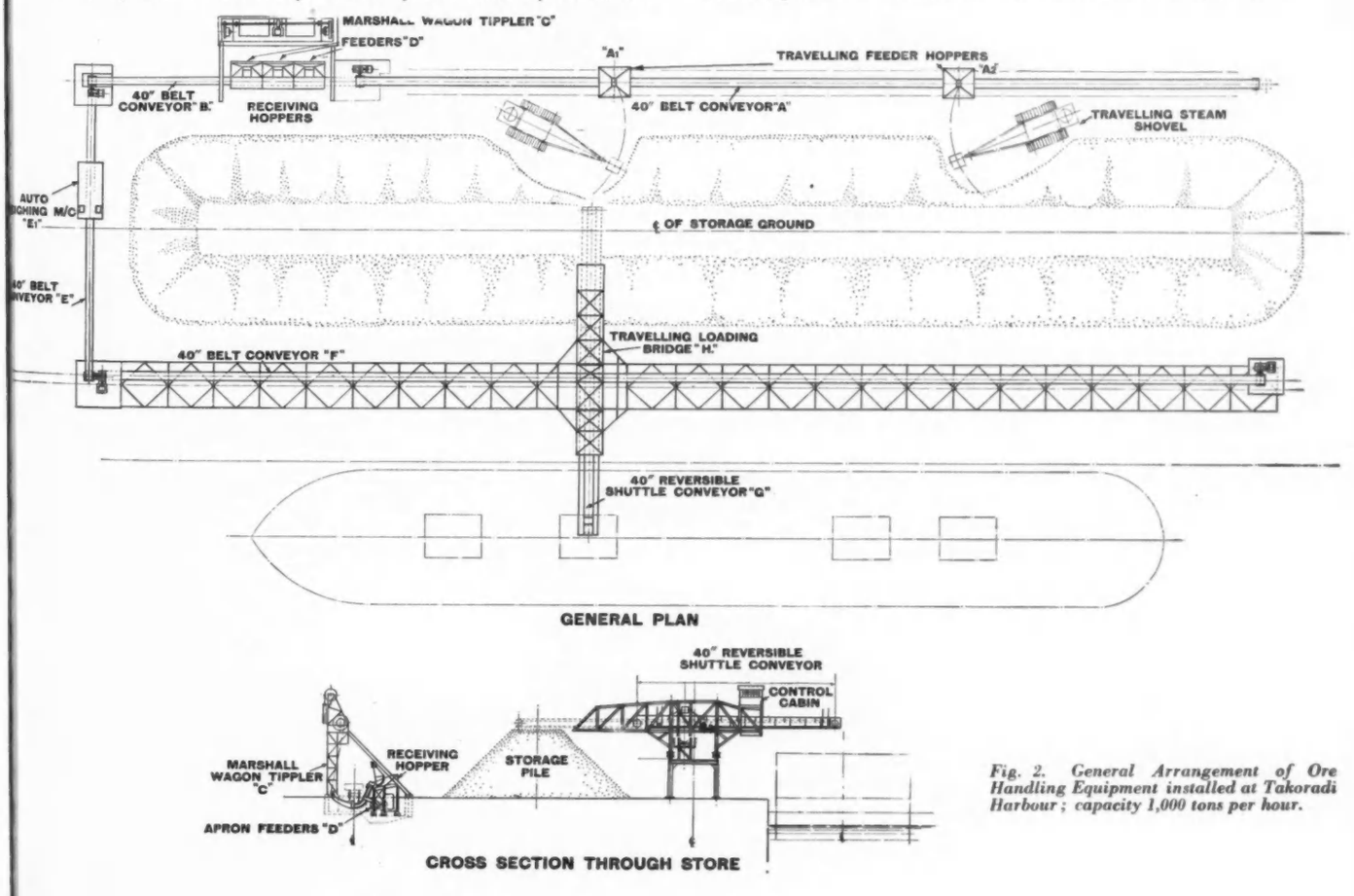


Fig. 2. General Arrangement of Ore Handling Equipment installed at Takoradi Harbour; capacity 1,000 tons per hour.

The Handling of Ore for Export—continued

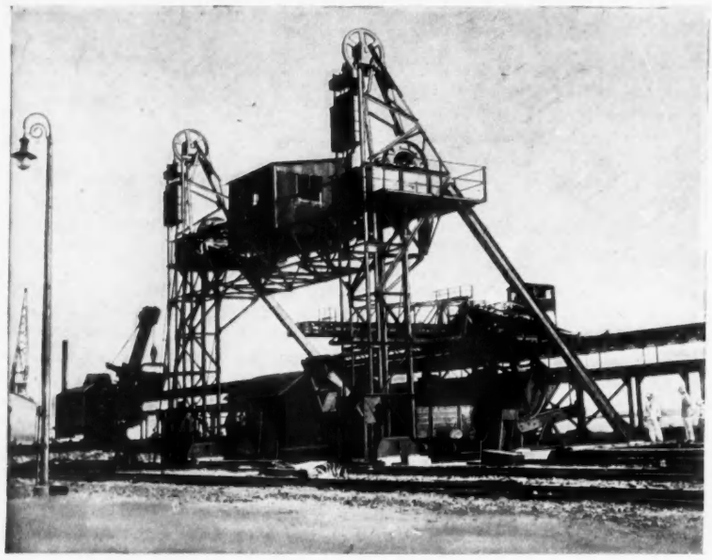


Fig. 3. Receiving Hopper situated beside Wagon Tippler.

the Gold Coast, West Africa, nine miles from Sekondi, was followed by an exodus of shipping interests from the latter port to Takoradi, where the modern deep-water wharves and safe anchorage for the largest of passenger liners and cargo vessels inside its breakwaters, relegated Sekondi, with its old methods of barge and surf boat loading for cargo and embarkation of passengers, to a position of quite secondary local importance, if not actual eclipse.

Among the many products of the Gold Coast Colony are gold, cocoa, mahogany, palm kernels and manganese ore, large deposits of which latter were prospected and opened up in the neighbourhood of Sekondi about 1915. An immediate demand for this valuable mineral was created by the exigencies of the Great War, and Sekondi, being the nearest outlet for the export of manganese ore at this period, the shipment of ore rose from 4,000 tons in 1916 to 403,000 tons in 1927.

It will be appreciated that the rise of Takoradi with its immediate potentialities for the construction of modern cargo handling plant could have but one result, and in 1928 plans were completed for the installation of a ship loading plant for manganese ore along one of the deep-water wharves of the new port.

The erection of a modern ore loading plant capable of dealing with a capacity of 1,000 tons per hour was started in 1929, and in February of 1930 the plant was completed, and shipment of ore direct from rail into ship or into storage and reclaiming from storage began in the same month.

The immediate result of the opening up of this ore loading plant at Takoradi was the displacement of approximately 800 natives who were nominally employed at Sekondi under the old conditions of barge loading, and the employment of a small staff of about a dozen natives with one white overseer to operate and maintain the new plant.

When it is realised that one ship of 8,000 tons can be loaded by this new plant within the twelve daylight hours of one working day with the small staff mentioned, as against 10 to 14 days at Sekondi, employing 800 natives, it will readily be conceded that the economic advantages resulting from the installation of this modern ore loading plant are overwhelming and have amply justified the prevision of those responsible for its inception.

The design of the ore loading plant at Takoradi was entrusted to the Fraser & Chalmers Engineering Works of The General Electric Co., Ltd., by the African Manganese Co., Ltd., who are the sole exporters of manganese ore on the Gold Coast. After careful study of the local conditions and requirements, a final design was accepted for a plant capable of handling ore at the rate of 1,000 tons per hour direct from rail by means of a wagon tippler and into ship or storage *via* a scheme of belt conveyors, based on the Robins system, and a travelling loading bridge.

Reference to Fig. 2 will show that the plant is arranged round three sides of a central storage ground capable of holding 31,000 tons of ore in bulk, and is divided into two parallel sections connected by an inclined cross conveyor at one end, the whole plant consisting of five 40-in. belt conveyors, a wagon tippler, an automatic weighing machine, a travelling loading bridge and two travelling reclaiming hoppers.

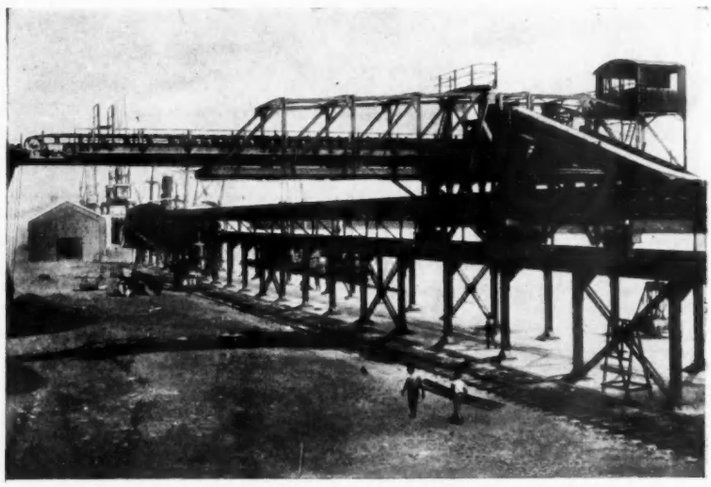


Fig. 4. Travelling Bridge provided with Conveyor for delivering Ore either into Ship's Hold or on to Storage Ground.

Simplicity of operation was one of the objects aimed at so that the plant could be operated by semi-skilled native labour with the minimum of skilled supervision, and subsequent operation of the plant has shown that this object has been achieved.

For convenience of reference, the various sections of the plant have been indexed in Fig. 2 as follows:—

A.	Storage reclaiming conveyor.
A1, A2.	Travelling reclaiming hoppers mounted over storage reclaiming conveyor "A."
B.	Intake conveyor receiving from conveyor " A " or from receiving hopper of wagon tippler " C."
C.	" Marshall " patent wagon tippler.
D.	Steel apron feeders extracting ore from wagon tippler receiving hopper and delivering on to conveyor " B."
E.	Inclined cross conveyor to outloading section of plant.
E1.	Continuous " Westminster " automatic weigher mounted on conveyor " E."
F.	Trunk conveyor on travelling loading bridge gantry.

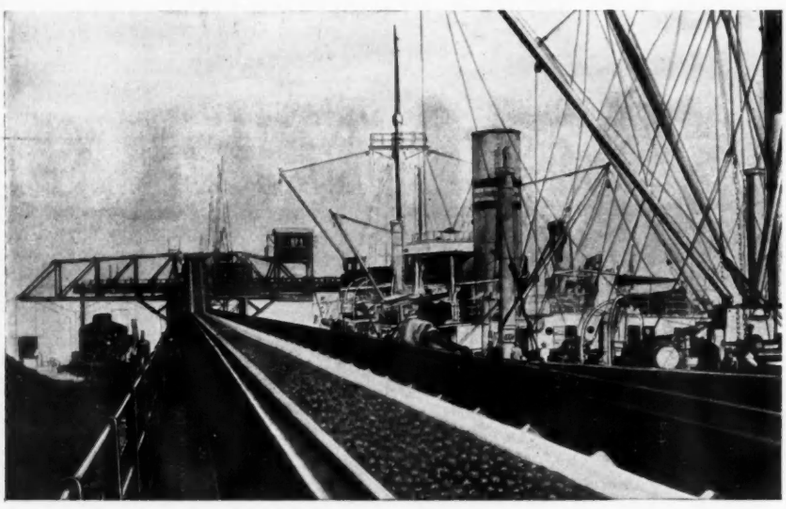


Fig. 5. Another View of Travelling Bridge loading Ore into Ship's Hold.

The Handling of Ore for Export—continued

G. Reversible shuttle conveyor in travelling loading bridge delivering ore direct into ship or on to storage ground.
H. Travelling loading bridge carrying reversible shuttle conveyor " G."

The method of operating the plant is as follows:—

Manganese ore is brought down from the mines in trains of 25-ton capacity steel wagons which are shunted on to a track running through the wagon tippler " C," Fig. 1. The wagons are then uncoupled and each is, in turn, adjusted in place on the hoisting platforms of the tippler which carries the wagon up and over, discharging the contents into a large receiving hopper, Fig. 1.

From the receiving hopper the ore is drawn continuously by means of the three steel apron feeders " D " and delivered on to belt conveyor " B," which in turn delivers the ore on to conveyor " E," where it is automatically and continuously weighed through the " Westminster " automatic belt weigher " E."

From conveyor " E " the ore is delivered on to conveyor " F," which in its turn delivers the ore on to the reversible shuttle conveyor " G " in the travelling bridge " H," see Fig. 4.

The shuttle conveyor " G " delivers the ore either direct into the ship's hold, Fig. 5, or on to the storage ground, Fig. 4, the frame carrying the conveyor being mounted on rollers and capable of being extended out either over the ship or over the storage ground.

The travelling bridge is mounted on a longitudinal gantry running the whole length of the storage ground so that it may be travelled to any hold of the ship whatever position the latter may take up along the wharf, or it may distribute ore over the whole length of the storage ground. The width of this distribution is adjusted by the travel of the shuttle conveyor inside the bridge. It will thus be seen that the whole system makes for great flexibility in operation.

Ore is reclaimed from the storage ground by means of two travelling " Ruston " steam shovels mounted on caterpillar tractors, each having a maximum bucket capacity of 4 tons. These shovels scoop the ore from the storage pile and deliver it into the two travelling reclaiming hoppers A1, A2, which in turn feed the ore on to belt conveyor " A." From conveyor " A " the ore is delivered on to conveyor " B " and so into ship by the same route as previously outlined from the tippler hopper feeders " D."

The advantages of the reclaiming portion of the plant are threefold, in that (1) it may augment the quantity of ore being tipped from the wagons; (2) it may load into ships when no train is available; and (3) it may be used if necessary to redistribute ore from one section of the storage ground to another.

The whole of the plant is electrically operated and the conveyors are arranged for sequence starting and control, whereby each conveyor can only be started up in the proper sequence. Thus, the reversible shuttle conveyor " G " is first started up, and is followed in order by conveyors " F," " E," " B " and " A." It is not possible to start up any motor out of this order, thus ensuring that no ore can be transported over any one conveyor unless the following conveyor to which it feeds is also running. The control gear is so designed that failure of any one conveyor automatically shuts down the conveyor feeding it, but not the conveyors fed from it.

Emergency push buttons are located at suitable points so that if necessary all the conveyors can instantly be stopped by the pressing of any one of the buttons, after which the plant can only be started up again in the proper sequence.

The brakes on the wheel bogies of the travelling loading bridge are of the electro-mechanical type and are fitted with solenoids electrically connected to the controller of the travelling motor so that when the motor is running, the solenoid plungers are lifted, keeping the brakes free. A second or two after the current is shut off from the motor the plunger drops under the influence of a balance weight, which raises the brake shoes against the rail.

The Oxelösund Scheme.

Following close on the successful inauguration of this ore loading plant at Takoradi came a scheme of a similar nature in Sweden for the export of Swedish ore, where a scheme of belt conveyors (Robins system) with wagon tippler, and travelling ship loading tower is installed at the Port of Oxelösund, forming an extension to an existing plant for the loading of ore into ships or into storage.

The arrangement of this plant is in the form of a " T " with the wagon tippler at the base, and the travelling loading tower running along the top, as shown in the diagram, Fig. 6.

The new extension is designed to deal with 750 tons of ore per hour and is arranged immediately adjacent to the existing storage ground which is situated alongside the main railway from the mines, Fig. 7. A subsidiary line is laid along one side of the storage ground and parallel to the main line, and carries an electrically-operated steel transfer car of 90 tons capacity. This car is arranged for side dumping, the ore being dumped into the storage ground or reclaimed from storage.

One of the problems which had to be faced in designing this plant was the fact that at certain times of the year the ore in the wagons arriving from the mines is frozen in one mass, and suitable means had to be provided for breaking it up before delivering it into the transfer car and on to the conveyors.

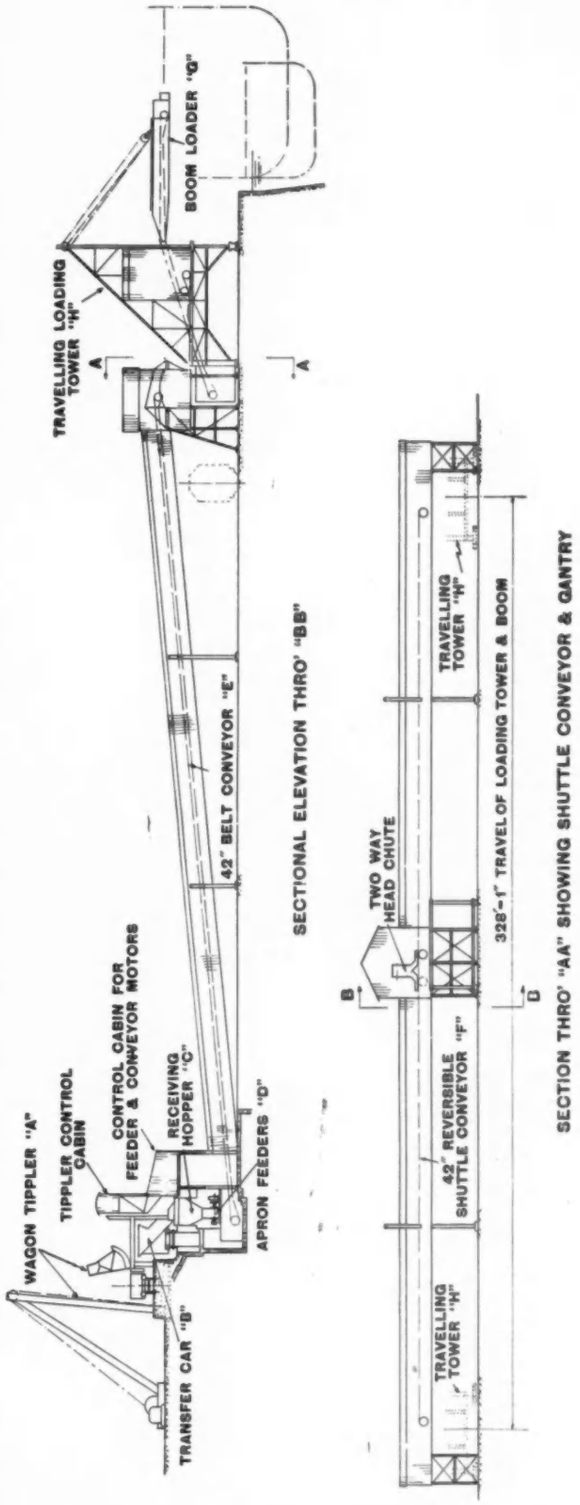


Fig. 6. General Arrangement of Ore Handling Plant at Oxelösund; capacity 750 tons per hour.

On this account it became necessary to include, as an integral part of the wagon tippler, Fig. 8, a special anvil for breaking up the frozen ore into easily handled lumps, together with a fixed grid to retain any lumps larger than the conveyor could handle.

For convenience of reference the various sections of this plant have been indexed in the diagram, Fig. 6, as follows:—

A. Wagon tippler and breaker bench.
B. Existing electrically-operated transfer car.
C. Receiving hopper.

The Handling of Ore for Export—continued

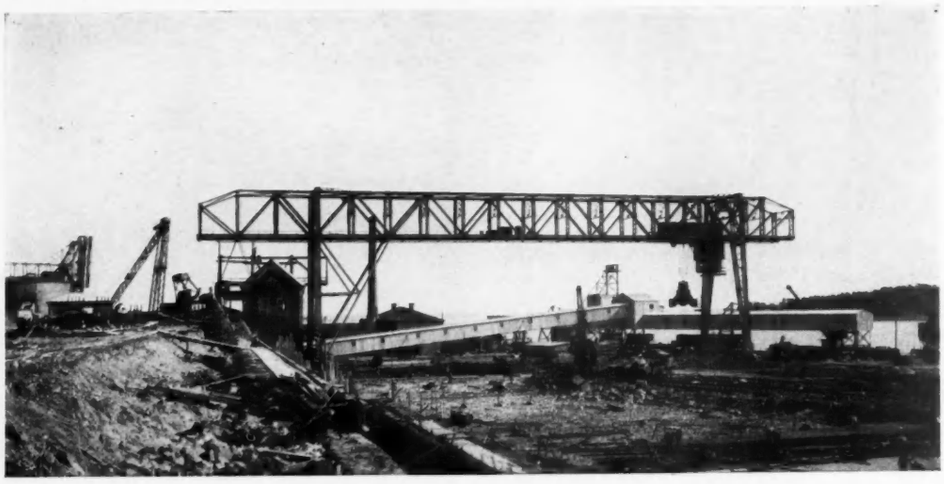


Fig. 7. Site of New Extension to Ore Handling Plant at Oxelosund, Sweden.

D. Steel apron feeders.
E. Trunk conveyor to shiploading section.
F. Reversible shuttle conveyor.
G. Boom loading conveyor.
H. Travelling loading tower.

The sequence of operation of the plant may briefly be described as follows:—

Trains of steel wagons, each carrying 45 tons of ore, are received from the mines and are shunted on to the track running through the tippler "A." Each wagon is uncoupled and adjusted in position on the tippler hoisting platform. The truck is then lifted bodily and turned over, discharging its contents over the breaking plate and grid into the transfer car "B." The breaking plate, being provided with vee-shaped projections, breaks up any large masses of frozen ore and any lumps which are too large to pass through the fixed grid are split up by hand.

Fig. 8. Wagon Tippler taking 45-ton trucks.

The transfer car "B," which is capable of holding two wagon loads of ore, can also be used when reclaiming ore from the storage pile, being filled by a grab from the overhead storage bridge and run into position over the receiving hopper "C." From the transfer car the ore is discharged direct into the receiving hopper "C," whence it is continuously drawn by means of the two steel apron feeders "D" and delivered through a chute on to the tail end of the trunk line conveyor "E," which conveys it up to the cross shuttle conveyor "F." The shuttle conveyor "F," being reversible in direction of running and capable of travelling from one end of the enclosed gallery to the other, can be attached to either end of the travelling loading tower "H" so that the ore may be discharged on to the boom conveyor "G" and delivered direct into the ship's hold. At the end of the boom conveyor is fixed an adjustable trimming plate for distributing the ore evenly over the hold.

The whole of the plant is electrically operated and an interesting feature of the control system is the method by which the two apron feeders "D," the trunk line conveyor "E," the shuttle conveyor "F," and the boom conveyor "G" are simultaneously controlled from one point, where the five control equipments are mounted on one frame with their corresponding shunt field regulators mechanically coupled to give simultaneous speed control of the whole of the conveyors.

Each panel is fitted with a double pole change-over switch, the upper contacts allowing individual selection and operation of any particular motor for testing purposes, and the lower contacts providing sequence control of the whole of the conveyor motors, a double pole single throw control switch being provided for starting purposes.

Failure of any one conveyor equipment also shuts down the conveyors feeding into it, but not the conveyors fed from it. On elimination of the fault, the stationary conveyors can be restarted, without stopping the conveyors which have continued to run, by operating the shunt field regulators in order to close the full field interlock. Trolley wires and collectors are provided for the travelling sections of the plant, namely, the reversible shuttle conveyor "F" and the travelling loading tower "H."

The control of the tower traverse equipment is effected by a master controller having a central "off" position, four positions "forward" and four positions "reverse," a no-volt position being provided without notch, between the "off" position forward or reverse. The acceleration of the motor is under the control of the current lock-out devices which are attached to the contactors and are independent of the speed of operation of the master controller.

A magnetic brake on the motor is automatically applied when the master controller is brought to the "off" position, but the clamp brakes on the wheels of the tower bogey are applied under the control of a special delay relay mounted on the panel which prevents the application of the bogey brakes until approximately twelve seconds after current to the motor has been cut off, thus giving the tower time to slow down and ensuring a smooth stop. The travelling loading tower is provided with special electro-mechanical brake bogies, similar to those fitted to the travelling bridge on the ore loading plant at Takoradi.

The wagon tippler hoist and the loading tower boom hoist are similarly controlled, limit switches being fitted to prevent over-running, while emergency push button switches are arranged at suitable points whereby the whole plant may simultaneously be brought to a standstill should any emergency arise.

Concrete Proofing Co., Ltd. v. Cement Gun Co. Ltd.

In the Chancery Division, on Friday, February 3rd, Mr. F. E. Bray mentioned the matter of the *Concrete Proofing Co. v. Cement Gun Co.* to Mr. Justice Bennett. It had been adjourned for three weeks to allow evidence to be filed.

Mr. Bray said it was a motion in respect of six trade-marks relating to the word "Gunite" as applied to a process of cement-rendering, the relief asked being the expunging of the mark from the register of trade-marks, it being alleged that in certain classes it had not been used at all. At the last hearing it was suggested that the matter should be put into the witness list. But Mr. Burrell, who appeared for the other side, was now prepared to consent to an order for the removal of the six marks and for payment to the applicants of their costs, and for the payment of the costs, if any, of the Registrar of Trade Marks.

His Lordship: By consent. Very well.

Clyde Navigation Trust: Developing Empire Trade

A VISIT of considerable importance to both Scottish and Australian interests was undertaken last month by Mr. Walter Leitch, the Agent-General for Victoria, when he visited Glasgow as the guest of the Clyde Navigation Trust. This visit marks another important event in the steps being taken by the Clyde Trust, through its Commercial Department, for the development of Empire trade through the port, markets and industries of Scotland. His programme, which was arranged by Mr. Harold M. Ford, commercial manager of the Clyde Trust, was an extensive one, extending over two days.

In addition to visiting the Glasgow Corporation Meat, Fruit and Produce Markets, where he conferred with a number of firms on matters affecting Australian trade, he was the guest of honour at a luncheon given by the Lord Provost of Glasgow, where speeches were made by both the Lord Provost and Mr. Leitch bearing on Australian trade with Glasgow.

Mr. Leitch was also the guest of the Glasgow Royal Exchange, where he was received by the President, Col. Robert McLaren, and replied to a speech of welcome.

His other engagements included a visit to the Chamber of Commerce, and luncheon with Mr. W. F. Robertson, the Chairman, and some members of the Clyde Trust.

Further, Mr. Leitch kept over twenty appointments at the Commercial Manager's office with firms representative of every class of Australian export, and also Glasgow firms anxious to establish Scottish business on the Australian market. Careful note was taken of these meetings with a view to the Agent-General making suitable representations to his Government and to the various producing organisations throughout Victoria on his return to Australia later this year.

The luncheon at the City Chambers was presided over by the Lord Provost, Mr. A. B. Swan, and the company included members of the Corporation, the Clyde Trust, the Chamber of Commerce, and representatives of every class of trade in which Australia is interested.

In proposing the health of his guest, the Lord Provost said that one wondered why their kinspeople across the sea had not realised what a great place Glasgow and the West of Scotland was, and what a large field there was for the distribution of Australian products in this part of the world. Until a few years ago Glasgow had comparatively few direct shipments from Australia, the homeward trade for a number of years being a stationary one.

Following on the action of the Clyde Trust in sending an emissary to New Zealand and Australia, there had been a large increase both in trade and shipping with Glasgow from Australia, and he was glad to tell Mr. Leitch that, largely through the work of the Clyde Trust in opening up business between Glasgow traders and Australian producers, this trade had been almost trebled in the last three years, and shipping faciliites doubled.

The Lord Provost made special reference to the development of the fruit trade, explaining that up to four years ago not a case of fruit was shipped to Glasgow, with the result that very little Australian fruit was known in Scotland, but last year he understood that eight shipments, bringing over 200,000 cases, were sent to the Glasgow market. When he told them that Glasgow purchased two million cases of American apples every year, it showed what room there was for still further development in that trade between Australia and this country.

Within the marketing area of Glasgow there was a population for distribution of produce of some six million people, and it was a matter of wonder to him why Australian interests had for so long elected to concentrate over 90 per cent. of their marketing and trade in one centre, namely, London. He did not think that was good business from Australia's point of view.

Reciprocity Wanted.

There was another side to the question, continued the Lord Provost. They had many products in Scotland, and they were being very badly hit in this country. If Australia, as a country, had all the basic materials for constructing the things which were made in Scotland, then let them go on and prosper. But if the Scottish position was such that they could produce here and send to Australia something that was cheaper than she reasonably could produce, then he would ask that Glasgow and the West of Scotland might be considered. He hoped that reciprocity between Australia and this country would be very general and generous, and that we would look with a very open mind to Australia for any product we might want to buy. We would ask that, all things being anything like equal, Australia should give Britain the preference.

Mr. Leitch, in the course of his reply, referred to the Lord Provost's comments on preferences given to the Old Country. When he came to Britain in 1929 he was met with two statements: one was that Australia was anti-British, and the other was that Australians did not want to buy British goods. He failed to understand that. At that time he replied to these criticisms by pointing out that in 1929 Australia bought more goods from Britain than any other country in the world did except India. In 1929 India, with a population of 320,000,000, bought goods to the value of £78,000,000; Australia, with her population of 6,500,000, bought goods to the value of £54,00,000, and Canada came next with purchases totalling £37,000,000. He thought that was not bad, considering they had such a small population.

During the six years' trading up to 1930, Australia was the only country in the world that gave Great Britain a credit balance in her trade. That credit balance amounted to £48,000,000. Every other country gave her a debit balance. Denmark, from whom Britain bought so much butter and eggs, showed a debit balance of £248,000,000; the United States had a debit of £881,000,000, and the Argentine had a debit of £248,000,000. Certainly, Australia's duties were high, but they were not too high to protect their industries, and they were not too high to keep British goods out. Mr. Leitch also pointed out that, although certain duties were shown on the schedule, in many instances, if application were made to the Customs Department, goods from Britain were allowed into Australia free of duty.

Enterprise of Glasgow.

Referring to the main purpose of his visit, Mr. Leitch said he had always admired the initiative of the Port of London Authority and the manner in which they ran their affairs, but he also had a great admiration for the Clyde Trust, in so far as they had shown great enterprise and foresight in sending their commercial manager, Mr. Ford, to Australia to extend the scope of their activities, the results of which were clearly demonstrated in the magnified trade between Australia and Glasgow during the past three or four years.

It was this kind of initiative and enterprise which was going to win through in the present state of affairs of the world to-day, and he could assure them that when he returned to Australia he would spare no effort to place before producers and shippers the enormous advantages which they stood to gain by joining hands with the Clyde Trust in the building up of Empire trade with Scotland.

In an interview given to the Press, Mr. Leitch made some further striking comments on the impressions he had gained from his visit and said that if he had been a commercial traveller with the goods on him he could have booked a tremendous lot of business during the two days for Australian products. If, in future, Australia did not transact a very big trade with Glasgow in her primary products, he thought it would be the fault of the Australian seller and not of the Glasgow buyer.

Commenting on the fact that that day he had seen a display of Australian lambs in the Glasgow Meat Market, Mr. Leitch observed that in Australia, and particularly in Victoria, they produced some of the finest fat lambs in the world, and they arrived at a time when the lambs or ewes in this country were not available for consumption. Therefore they filled a much-needed place in this nation's food supply. Hitherto Glasgow had not bought as many lambs from Australia as it might have done, but he was rather inclined to think that that was not the fault of the Glasgow buyer, but rather was due to a lack of enterprise on the part of the Australian seller. He found, too, that boned beef and bacon were being imported into Glasgow from Australia, and he though that that trade could be considerably increased also.

More Refrigerating Tonnage.

In the Glasgow Fruit Market he witnessed just as much enthusiasm on the part of the buyers to secure Australian apples and pears as the buyers in the meat market were anxious to get Australian meat. Already, he pointed out, some of the fruit firms had got into touch with fresh sources of supply in Australia, and he was looking forward to a greatly increased trade in apples and pears in the coming season. There was also a prospect of Australia being able to supply a certain quantity of oranges and grape fruit.

Mr. Leitch, expressing his gratification at the increase which had occurred in the last three or four years in Australian trade in Glasgow, said he was surprised to discover that, despite the efforts made and the results achieved, there was still a vast field for further development of their products on the Glasgow markets. He understood that one of the biggest difficulties which had existed in the past—that of the provision of regular

Clyde Navigation Trust—continued

and adequate refrigerating tonnage to carry their perishable products—had now been largely overcome, and that this year was going to see the largest programme of refrigerating vessels ever put on the Australian service to Glasgow.

Reciprocal Trade.

He was of opinion that the interest shown by the Clyde Navigation Trust in the development of trade between Australia and Glasgow accounted very largely for the increased trade that had eventuated, and for the increased refrigerating tonnage which had been arranged for. Knowing that, Mr. Leitch said that both his Government and himself had been taking an active interest in opening up new trading connections between Victorian producers and Glasgow traders. Following upon his visit, it was his intention to make still further representations to his State Government in Victoria and to continue the co-operation with the Clyde Trust in placing traders in touch with the various interests of the State.

Commenting on Mr. Leitch's visit, Mr. Harold M. Ford, commercial manager of the Clyde Trust, spoke of its importance to all interested in reciprocal trade between Australia and Scotland. Mr. Leitch, he said, had taken a lively and practical interest in placing Australian visitors to this country in touch with the Clyde Trust in Glasgow, with the result that a number of very useful agencies had been formed by these visitors to represent Scottish manufactures in Australia.

The Agent-General's visit created a great interest among traders in Glasgow, and it is understood that active steps are already being taken in a number of directions to open up new channels of trade.

The Clyde Trust's commercial activities are not by any means being confined to trade with Australia, but we understand that great progress is being made in developing trade and shipping between New Zealand, whilst Mr. Ford has also taken in hand the question of opening up trade between South Africa and Glasgow, particularly in regard to South Africa's fruit industry, the trade of which at present is concentrated upon London and Southampton; whilst Californian and Jamaica interests are among other directions in which the Clyde Trust are spreading their commercial activities.

Italian Harbour Affairs

THE Principe Umberto breakwater in the Port of Genoa has just been completed in the underwater section by the laying down of a concrete block of 700 tons. This breakwater is an extension of the Molo Duca di Galliera and represents one of the most important works in the Port of Genoa, as it shelters both the Victor Emanuel III. Docks and the Mussolini Docks over a length of about 4,000 metres, the whole breakwater measuring about 3,400 metres in length. The enlargements in the Port of Genoa are being carried out by the Societá dei Lavori del Porto di Genova, and include the construction of three piers in the Mussolini Docks, for which a credit of 150 million lire has just been allowed. The first two piers, measuring 400 metres in length, and of the quay connecting these piers and measuring 150 metres in length, are now nearing completion.

The original project regarding the extension of the Port of Genoa to the west of the present harbour facilities has been slightly altered. As a matter of fact, consideration was at first given to constructing a set of dry-docks west of the Mussolini Docks, but now it has been decided to construct a fourth dry-dock measuring 350 metres in length along the Guardiano Mole and running parallel to the present dry-docking facilities at Alle Grazie, it will be possible to employ the area in the Polcevera zone for other purposes. This is the reason why three piers are now to be built in the Mussolini Docks instead of two, as planned in 1925, and the water surface remaining free between the Polcevera mouth and the piers is to be used as a dock for the air services, which have established their base in Genoa. The Consorzio Autonomo del Porto di Genova has invited tenders for the first portion of the work to be carried out in the Mussolini Docks, the building of 3,500 metres of quay walls at a cost of about 39 million lire. The work has been entrusted to the Societá Anonima Lavori del Porto di Genova.

At the Consiglio Provinciale dell 'Economia at Rome (Chamber of Commerce and Industry) a meeting has been held to consider the question of the Port of Civitavecchia, with a view to rendering it more adaptable to meet the increased requirements of traffic and to create adequate facilities for unloading and loading operations. The possibility of reducing harbour charges and of building an industrial zone was also discussed. It should be noted that Civitavecchia is the seventh port of Italy in order of importance, and that the works, which have just been started, include the following: (1) Increase of the depth of water in the port to 9 metres so as to enable large vessels to moor at the quay of the inner part of the Molo del Bicchiere, which is to be completed during the month of September next. At present the depth of 9 metres is only guaranteed at 10 metres from the quay. (2) The extension of the outer breakwater, the cost of which will reach 5 million lire. (3) Construction of the quay walls along the Traiano breakwater and the placing of railway tracks on them. (4) The demolition of the Lazzaretto mole. (5) The construction of a new quay to the right of the building of the old Darsena, and (6) the extension of the Trajano breakwater by about 80 metres in order to ensure safer entry of vessels into the Port of Civitavecchia. The Ministry of Public Works will provide the Molo del Bicchiere with appropriate storage and mechanical unloading facilities, which will be operated by an organisation controlled by the Government on similar lines to the Azienda dei Mezzi Meccanici del Porto di Napoli. It may be interesting to note that during 1932 imports into the Port of Civitavecchia included 480,244 tons of coal, 50,000 tons of cereals, 15,000 tons of oil, 21,396 tons of salt and tobacco, 22,000 tons of chemical fertilisers and 50,000 tons of general cargo.

According to statistics which have just been published by the Provveditorato del Porto di Venezia, shipping at that port during 1932 has shown an improvement in respect to 1931, there being an increase of 35,622 tons, corresponding to 1.27 per cent. It should be noted that this improvement is due chiefly to the increase of traffic during the last months of 1932, as during the first part of the year shipping had shown a decline in respect to 1931. During the month of December, 1932, imports into Venice reached 236,312 tons, with an increase of 65,160 tons, and exports had reached 36,635 tons, with an increase of 1,809 tons. The total increase of shipping at Venice during December reached 66,969 tons. Approval has been given to the works to be carried out in the Port of Venice, so that as soon as the credit of 28 million lire has been allotted the Provveditorato al Porto will undertake the projected improvements and enlargements.

The Ministry of Public Works is considering the opportunity of undertaking the construction of harbour facilities at Porto Civitanova and Pescara in the Adriatic.

Stothert & Pitt, Ltd., Bath.

The announcement recently made by Richter & Pickis, 6, Crescent, Minories, London, E.C.3, that they had completed an arrangement whereby " Ricanpick " Bucket Ladder Excavators for gravel, clay, chalk and overburden were to be made solely by Stothert & Pitt, Ltd., Bath, has not been ratified by their German principals, who design the " Ricanpick " Excavators, and in consequence Stothert & Pitt, Ltd., will continue to make bucket ladder excavators of their own design at their Bath Works, independent of any association with Richter & Pickis.

German Shipbuilding in 1932.

According to the statistics of the German Lloyd, 27 vessels aggregating 58,581 gross register tons were completed by German yards in 1932 compared with 87 vessels aggregating 176,755 gross register tons in 1931. Thus the German production of sea-going vessels declined by some 65 per cent. in a year. Foreign orders for tankers represented by far and away the largest proportion of the output, viz., 10 vessels aggregating 51,995 tons. Foreign orders completed in 1931 comprised 65 vessels aggregating 128,632 gross register tons.

Shipbuilding in German yards is now practically at a standstill, and the news that the German Levante Line was contemplating the placing of an order for two 4,500 gross ton freighters has caused a mild sensation.

On January 1st, 37 vessels aggregating 30,860 gross register tons were under construction at German yards for German account and 5 vessels aggregating 43,200 gross register tons for foreign account.

The Government's scrapping scheme whereby 400,000 tons of redundant and obsolete shipping is to be broken up will provide a certain amount of work for German yards during the present year.

Notes from the North

Manchester Ship Canal Company's Bill.

A BILL is being promoted in Parliament by the Manchester Ship Canal Company to repeal the section in the Manchester Ship Canal Act of 1919 which limited to 15 years from that date an increase of 50 per cent. in the maximum dues, tolls, and charges leviable in connection with its undertaking. The Bill also proposes to empower the company to absorb the undertaking of the Trafford Light Railway Company and to dissolve this company, which was formed under an order made by the Light Railway Commissioners in 1919. The capital authorised was £60,000, divided into 6,000 shares of £10 each, with borrowing powers not exceeding £20,000. Of this capital only 54 shares of £10 each were ever issued, on which £108 was paid up. The construction of a portion of this railway in Stretford was defrayed out of money temporarily provided by the Canal Company, and the Bill now proposes to cancel all shares issued and asks Parliament to sanction and confirm the expenditure of capital by the Canal Company in the construction of this section of the railway.

Widnes Dock.

London, Midland and Scottish Railway Company is introducing a Bill into Parliament authorising the company to abandon the Widnes Dock, which was constructed under powers obtained in the reign of George IV. Notice of the abandonment is to be given, and after one month the company may sell the site and any works thereon for the general purposes of their undertaking.

Ship Canal Returns.

The monthly approximate traffic return of the Manchester Ship Canal Company for December shows receipts of £99,082, or £18,982 more than in the previous month, but £14,880 less than in the corresponding month of 1931. The year's total receipts at £1,203,657 compare with £1,276,110 for 1931, and with £1,395,567 for 1930. It will be noted that the decrease, as compared with the previous year, was £72,453; the receipts in 1931 were £119,457 less than those in 1930, which, in their turn, were £133,217 less than those in 1929. The rate of decline appears to have been checked.

Wallasey Embankment.

Wallasey Embankment Commissioners last year spent £2,961 on the ordinary works and maintenance of Leasowe Embankment. The total expended by the Commissioners during the year was £27,639. Of the total rate for the year, £3,549 was paid by the Mersey Docks and Harbour Board on lands in the district and as statutory contribution.

New Bidston Dock.

The new dock which has been constructed on land formerly known as Bidston Moss Estate, Birkenhead, by the Mersey Docks and Harbour Board, has been the scene of testing operations preparatory to the official opening towards the end of next month. The dock was filled with water to test the sluices, etc., and these proved very satisfactory. The new dock is an extension of the West Float. It is 100-ft. long and 450-ft. wide, narrowing to 350-ft. at the golf club end. It has a passage 100-ft. wide, and vessels will be able to enter from the river and go right through the various docks up to Bidston. The Dock Board are offering the surrounding land for the erection of factories. The new bridge built over the passage was opened to traffic in July last.

Dock Board's Chain Tests.

A large number of expert witnesses were called on behalf of the Mersey Docks and Harbour Board in a Liverpool court the other day to show that a hoist chain was examined every month, and once a year was taken to the chain testing works, annealed, and thoroughly tested. The case was one in which a machinery attendant died from injuries received when a hydraulic hoist crashed to the basement in the Dock Board wool warehouses, Great Howard Street. William Morrod, mechanical inspector, said the chain in use was put on after a thorough test in March, 1932, and had been examined each month since. After the accident he found that a link, 96-ft. from the hoist shackle, had opened out, due to a faulty welding. It was impossible to detect this fault, which had probably developed since the last test. In addition, the final link before the shackle had fractured by crystallisation, but this was due to the shock of the broken chain falling upon it. The hoist which crashed had been in operation for 50 working days since the test and had made 2,740 lifts. Never in the history of the Board had a similar accident occurred, and witness agreed that it was a million to one chance that caused the accident.

Ribble Waters.

A suggestion that the Ribble Joint Committee should seek powers to extend their authority over the tidal waters of the Ribble is made by the Ribble Board of Conservators. At present the Committee's powers are confined to the fresh water areas.

New Mersey Dredger.

Mersey Docks and Harbour Board has accepted delivery from Messrs. Cammell, Laird and Co., Birkenhead, of the large sand pump hopper dredger "Hilbre Island." The vessel is designed to lift 3,500 tons of sand in fifty minutes from a depth of 70-ft. The trials, carried out in the Mersey, included exhaustive tests of the dredging machinery, which was manufactured by the builders, and more than fulfilled expectations. A speed of 12 knots was obtained, as against 11 knots contracted for.

River Dee Navigation.

Dee Conservancy Board has spent a lot of money during the year on improving the Northern Training wall. With reference to the cessation of work on the high training bank, Mr. Geoffrey Summers stated at the annual meeting that his firm was requested to stop work, the reason being that they were getting so far down the river that in rough weather and high tide a lot of material was being washed into the channel and doing more harm than good. They proposed to leave their railway track along the bank, so that at any time they would be able to rush heavy material down to make good any breach caused by a high tide. If at any time it was considered advisable to go on with the work, the firm would be prepared to do so. At the moment they were finishing off the end of the wall with heavy stuff, to make it safe so far as they could.

The average condition of the navigation during 1932 with regard to depth has been equal to the average condition of 1931. Many changes have taken place in the course of the navigable channel, from a point near the end of the northern training wall to a point about three miles below, and these changes, although at times promising improvement, have not yet produced any definitely favourable result. The work of raising and repairing about 800 yards of the northern training wall was commenced in June, 1932, and practically completed in September, 1932, and it has since been necessary to add a further quantity of stone to maintain the work. The total amount expended on this work during the year was £1,950. The high training bank during the year has been extended a further 108 yards, making a total length of 2,968 yards. The extension of the high bank has been stopped for a time and the end made up with heavy material. The distance from the end of the high bank to the end of the northern training wall is a little over a mile.

Ship Owners and Dock Board.

That the Mersey Dock Board should endeavour to reduce its charges is suggested by the Liverpool Steamship Owners' Association, whose annual report states that the year has seen no alleviation of the heavy burden of the charges levied on ships using the port, though concessions have been made in the case of cruising ships and in laying-up charges. "The general level of the dues remains at 72 per cent. above that of 1913, and has not been the subject of any reduction since 1922. During the same period of 10 years, wholesale prices have declined by 30 per cent., the cost of living index figure by 20 per cent., and freights by 30 per cent." Shipping using the port needed every possible relief, and in nothing more than in port charges, the cost of which was accentuated because Liverpool, almost alone of the principal ports, made no material concession to part cargoes. The Dock Board had stated that its budgetry position rendered reduction impracticable, but its accounts for 1931-32 showed expenditure within its control still exceeding that of 1913-14 by a high percentage.

Members of the Liverpool Steamship Owners' Association, who have elected Col. J. G. Beazley their chairman for the year 1933, own 4,777,015 tons gross of steam and motor shipping, comprising 21 per cent. of the total British steam and motor tonnage afloat; 34 per cent. of the number of such vessels of a speed of 12 knots and upwards; and 27 per cent. of the total number of such vessels above 5,000 tons. The past year had again been a most difficult one. Freights had been unremunerative; a very large amount of tonnage had been out of employment, and many ships had sailed, both outwards and homewards, with only a proportion of their cargo space occupied. Values have fallen substantially since 1929, but after making allowance for that fact it is estimated that the volume of the foreign trade as a whole handled in the Port of Liverpool in 1932 was from 25 to 33 per cent. below the volume dealt with in 1929.

Notes from the North—continued

Mersey Grain Handling Plant.

The grain handling plant which has been installed by the Liverpool Grain Storage and Transport Co., Ltd., at the Brunswick Dock was reported at the 50th annual meeting of the company to have proved a great success. Mr. Edward Paul, who presided, mentioned that in November, 1932, they discharged in 30 working hours from the steamer " Maasburg " no less than 10,000 tons of Manitoba wheat. Not only did this plant enable the company to discharge with greater efficiency and greater rapidity than of yore, grain which is destined to be stored with us for short or long periods, but it also enabled them to deal with, and to derive revenue from, a new form of traffic in the case of grain which is merely discharged and passed through the plant in transit without intention of storage. That was a considerable new asset to the business.

Concession to Bunkering Craft.

Mersey Docks and Harbour Board has decided that during the pleasure of the Board, vessels entering the port for the sole purpose of using certain of the graving docks and, or coaling appliances, and vessels bunkering with oil or spirit at the Dingle jetties, be charged 25 per cent. only of the full dock tonnage rates, subject to certain conditions, the matter to be reconsidered at the end of twelve months.

Mr. H. L. Roxburgh, Chairman of the Finance Committee, stated at a recent meeting of the Board that the proposal had been suggested by the committee experimentally, following representations made by shipowners, that a reduction of this nature might be the means of attracting additional vessels to the port for the purposes named. In considering the matter, it had been thought proper by the committee to limit the application of the reduced charges to those graving docks and coaling appliances which were in the least demand at the present time.

In some quarters of the port there is a feeling that the concession, whilst welcome, is very belated. The reduction now authorised for the experimental period of twelve months puts Liverpool on an equality with Glasgow in this matter. South Wales ports are still lower than either Glasgow or Liverpool. Hitherto Liverpool had been at a disadvantage with Glasgow in the competition for vessels desiring to come here solely to bunker with coal or oil. It is hoped that Liverpool will in future get its share of such vessels.

Mersey Tunnel Progress.

At the February meeting of the Mersey Tunnel Joint Committee it was decided that tenders be invited for surfacing the roadway of the tunnel in various materials, including asphalt, cast iron, and rubber, and for maintenance over a number of years, the tenders to be submitted to the Ministry of Health.

It was reported that the total value of engineering works completed to date amounts to £4,319,979. A sum of £236,000 has been expended on ventilation works, and good progress is being made with fans, electric lighting, driving gear and electric cables.

Work now being done includes the fixing of the glass dado, putting the finishing touches to the interior and the laying of cables. Rapid progress is being made with the retaining walls at George's Dock, Liverpool.

Lower Ship Canal Dividend.

Owing to the decline in trade, reflected in a drop of £72,453 as compared with 1931 in the traffic receipts, and to the fact that the net revenue in 1931 had been saved from a sharper reduction by economies in working which could not be carried much farther, the Manchester Ship Canal Company has reduced its dividends. The directors recommend the payment of 3½ per cent. on the Corporation preference shares and ½ per cent. on the ordinary shares. These last two dividends are at one-half the rates paid for 1931, which, in their turn, were at one-half the rates paid for 1930.

Aden Port Trust

The following are the returns for the month of December, 1932, of shipping using the port:—

	No.	Tonnage
Merchant Vessels over 200 tons ...	124	540,721
,, ,, under 200 tons ...	2	324
Government Vessels	4	8,250
Dhows	132	5,645
PERIM.		
Merchant Vessels over 200 tons ...	21	68,094

The number of merchant vessels over 200 tons that used the port in December, 1932, was 124, as compared with 110 in the corresponding month last year, and the total tonnage was 541,000, as compared with 449,000.

Excluding coal, salt, fuel oil, and military and naval stores and transhipment cargo, the total tonnage of imports in the month was 9,900, and of exports 6,100, as compared with 12,400 and 6,400 respectively for the corresponding month last year.

The total value of imports excluding Government stores was Rs.51,22,000, as compared with Rs.48,16,000 for December, 1931, and of exports Rs.33,56,000, as compared with Rs.38,04,000.

The total value of both imports and exports together was Rs.84,78,000, as compared with Rs.86,20,000 for the corresponding month last year.

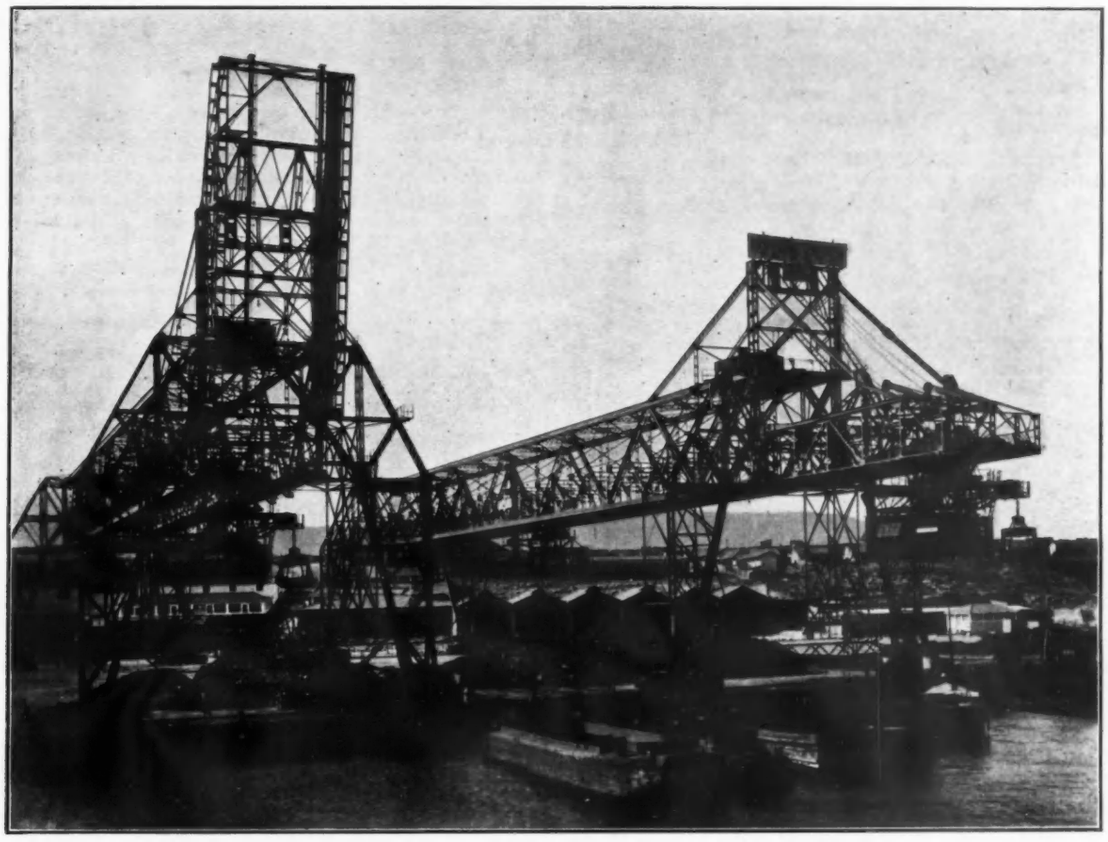
Imports during the month were above those for December, 1931, in the case of coffee, hardware, hides (raw), seeds, skins (raw), piece goods (grey and printed or dyed), and tobacco (manufactured); and below in the case of grain, pulse and flour, gums and resins, sugar, piece goods (white), twist and yarn, tobacco (unmanufactured), and treasure (private).

Exports were above those for December, 1931, in the case of coffee, hardware, seeds, piece goods (grey, white and printed or dyed), and tobacco (manufactured); and below in the case of grain, pulse and flour, gums and resins, hides (raw), skins (raw), sugar, twist and yarn, tobacco (unmanufactured), and treasure (private).

TRADE OF THE PORT.

Article.	Unit	Imports.		Exports.	
		Quantity.	Value Rs.	Quantity.	Value Rs.
Coal	Tons	0	0	0	0
Coffee	Cwts.	8,029	2,86,275	8,128	3,43,916
Grain, Pulse and Flour	,,	38,815	2,09,948	22,306	1,11,706
Gums and Resins	,,	3,565	50,598	2,687	51,230
Hardware	—	0	23,284	0	23,321
Hides, raw	No.	3,620	2,860	1,965	2,963
Oil, Fuel	Tons	52,661	13,16,525	0	0
,, Kerosene	Gls.	24,000	15,750	9,520	6,473
,, Petrol	,,	0	0	2,880	3,810
Salt	Tons	0	0	33,067	3,43,807
Seeds	Cwts.	4,279	35,914	1,248	13,056
Skins, raw	No.	429,133	2,33,949	367,451	2,90,258
Sugar	Cwts.	12,624	85,462	10,914	70,329
Textiles—					
Piece Goods, Grey	Yds.	6,311,800	8,64,882	5,029,450	6,96,701
,, ,, White	,,	741,199	1,24,414	321,660	56,249
,, ,, Printed or Dyed ...	,,	1,333,137	2,67,759	1,682,766	3,89,511
Twist and Yarn	Lbs.	254,740	1,12,655	178,166	75,549
Tobacco, Unmanufactured ...	,,	528,892	79,624	493,332	80,406
,, Manufactured	,,	50,008	47,699	30,826	21,892
Other Articles	No. of Pkges.	80,978	11,56,409	33,941	4,93,097
Treasure, Private	—	0	2,07,775	0	2,82,036
Total ...	—	—	51,21,782	—	33,56,310

Near Eastern Port Matters



New Electric Coal Elevators at Pireaus.

ACCORDING to statistics which have just been published by the Chamber of Commerce and Industry at Burgas, shipping at that port during 1932 included the imports of 70,666 tons of goods valued 760,935,274 levas, and the exports of 125,919 tons valued 1,128,761,801 levas. It may be interesting to consider in this regard the following figures regarding shipping at Burgas in the course of the past five years, as far as imports are concerned:—

	Tons	Levas
1927	62,544	1,705,286,488
1928	78,211	1,824,715,753
1929	102,218	1,922,683,626
1930	72,414	1,117,762,535
1931	74,424	1,238,075,088
1932	70,661	760,985,274

The Chamber of Commerce and Industry at Salonika has published detailed statistics regarding shipping at that port during 1932, according to which arrivals and clearances included 1,234 steamers representing 1,265,454 n.r.t. and 2,003 sailing vessels representing 56,202 n.r.t. Comparing the figures with 1931, the net registered tonnage regarding steamers has shown a decrease of 258,291 n.r.t., while the net registered tonnage of sailing vessels has shown an increase of 11,438 n.r.t. The first place among foreign countries is occupied by Italy, followed by Britain, America, Germany, etc. As the prospects of tobacco exports from Macedonia are improving, it is expected that 1933 will lead to an increase in shipping from the Port of Salonika.

The situation of shipping in the Port of Pireaus is improving apart from the point of view of organisation. It may be interesting to note that the coal trade quay at Pireaus has just been provided with electric coal elevators, which have been built by the Reparto Ponti and Grue of the Cantieri Riuniti dell 'Adriatico at Trieste, and the erecting of these elevators has considerably improved the situation of shipping. These electric coal elevators are of the travelling bridge type, with two turntable and running cranes with automatic crab of a gross carrying capacity of 9.5 tons and 3 tons respectively. The Organismos Limonos Pireos (Pireaus Harbour Authority) is operating these elevators.

The question of undertaking the construction of a large dry-dock at Pireaus with large repairing facilities is again being taken into consideration, and it is understood that negotiations have been started for the purpose of creating a shipbuilding yard at Pireaus with the aid of Italian capital. If special concessions are granted by the Greek Government to ships calling at Pireaus for repairing purposes as well as for bunkering, it is expected that the venture would be successful, especially in view of the high cost of repairing ships in the Bosphorus.

The warehousing facilities under construction at Split and Sussak have been completed, and they are to be opened in the course of the next few weeks.

Ruston-Bucyrus, Ltd., Lincoln.

In *The Dock and Harbour Authority* for February, 1933, a description was given of the exhibits of Ruston-Bucyrus, Ltd., at the British Industries Fair, Birmingham.

In the description of the 21-B Dragline it is mentioned that "The engine is a 4-cylinder Diesel engine of 64 h.p.," but we are now informed by Messrs. Ruston-Bucyrus, Ltd., that this should be 70 h.p.

Port of Vancouver, British Columbia.

During the past year grain exports through the Port of Vancouver totalled 104,700,471 bushels, as compared with 70,696,935 bushels in 1931 and with 97,394,984 bushels in 1928. Exports during the current crop year from August 1st last to December 31st last totalled 46,796,079 bushels, as compared with 20,620,303 bushels in the corresponding period of 1931. Grain accounted for 84 per cent. of Vancouver's export ocean-borne trade last year.

Emden's Harbour Traffic, 1932.

The results of the Emden Harbour traffic of the year 1932 show partly more favourable figures than in the year 1931. It is interesting to note that imports have decreased and exports have increased.

Sea-going shipping traffic showed the following figures in 1932 incoming: Vessels with cargoes 1,250, with 545,670 net registered tons; in ballast 1,024 vessels, with 1,063,334 net registered tons, altogether 2,082 vessels with 1,609,004 net registered tons; in 1931 a total of 1,982 vessels with 1,363,694 net registered tons. Outgoing: 1,788 vessels with cargo with 1,366,201 net registered tons, 485 in ballast with 294,596 net registered tons; altogether 2,273 vessels with 1,640,797 net registered tons, against 1,945 vessels with 1,319,970 net registered tons in the year 1931. The above figures only refer to incoming and outgoing vessels in sea-going traffic.

The Port of New York

Latest Data issued by the Bureau of Commerce

Foreign Trade at the Port of New York.

THE value of exports and imports at the Port of New York for 1932 (December estimated) was $1,131,270,000—a decline of 41 per cent. as compared with the 1931 figure of $1,930,245,000. The decline of unit prices accounted for most of the drop in foreign trade figures. The volume of exports and imports is estimated to have declined only 2½ per cent.

The value and tonnage of foreign trade for the past decade is shown in the following table:—

Value and Tonnage of Foreign Trade at the Port of New York—Exports and Imports.

Year	Value	Per cent. U.S.	Tonnage	Per cent. U.S.
1923	$3,316,672,000	41·7	22,953,000	24·7
1924	3,347,701,000	40·8	23,091,000	24·8
1925	3,848,585,000	42·1	23,735,000	25·6
1926	3,887,502,000	42·1	24,060,000	21.6
1927	3,768,893,000	41·6	24,482,000	24·8
1928	3.719,962,000	40·4	26,110,000	25 0
1929	4,055,811,000	42·1	26,703,000	24·8
1930	2,853,106,000	41·3	22,478,000	23·5
1931	1,930,245,000	42·8	18,530,000	24·5
1932	*1,131,270,000	38·6	**18,056,000	26·9

*December estimated. **Six months estimated.

The total value of exports for the year was $477,923,000 (December estimated) compared with $868,700,000 in 1931, a decline of 45 per cent. The decreased shipments of United States manufactured products, due largely to trade barriers and decreased purchasing power abroad, affected profoundly exports at the Port of New York, which is the shipping point for machinery, vehicles and other articles of high value.

Some of the principal items of export at the Port of New York and their percentage decline as compared with the previous year are as follows: Agricultural machinery and implements, 88 per cent.; refined copper and manufactures, 62 per cent.; industrial machinery, 61 per cent.; automobiles and parts, 51 per cent.; meat products, 49 per cent.; and petroleum and products, 32 per cent. The above articles and commodities constituted 31 per cent. of the total value of exports at the Port of New York, estimated on the basis of 10 months available data.

The drastic loss of export business to the transportation, terminal, stevedoring and shipping interests of the port in the past three years is emphasised by the comparative statistics for these five leading exports:—

	Calendar Years 1932	1929	Net Change Amount	Per cent.
Agricultural machinery and implements	$6,690,922	$81,639,473	—$74,948,551	—91·8
Refined copper and manufactures	12,903,921	97,810,241	—84,906,320	—86·8
Industrial machinery ...	39,667,609	168,182,814	—128,515,205	—76·5
Automobiles and parts ...	48,748,146	364,758,449	—316,010,303	—86·7
Meat products	10.514,306	41,818,640	—31,304,334	—75·0

Foreign trade tonnage statistics are available for the first six months of the year only, but it is estimated that the volume of exports amounted to 4,416,000 tons in 1932, which, compared with 5,968,000 tons in the year 1931 shows a decline of 26 per cent. The value and tonnage of exports at the Port of New York for the last ten years follows:—

Value and Tonnage of Export Trade at the Port of New York.

Year	Value	Per cent. U.S.	Tonnage	Per cent. U.S
1923	$1,518,852,000	36·4	11,236,000	22·6
1924	1,657,698,000	36·1	12,007,000	23·0
1925	1,774,436,900	36·2	11,771,000	23·7
1926	1,662,538,000	34·6	10,950,000	16·2
1927	1,726,110,000	35·5	11,251,000	19·8
1928	1,769,905.000	34·5	10,858,000	18·7
1929	1,903,095,000	36·3	9,738,000	17·1
1930	1,384,419,000	35·9	7,581,000	16·2
1931	868,700,000	35·8	5,968,000	15·0
1932	*477,923,000	29·6	**4,416,000	13·1

*December estimated. **Six months estimated.

The value of imports at the Port of New York in 1932 (December estimated) was $653,347,000, a decline of 38 per cent. compared with $1,061,545,000 in the year previous. Although there was a decline in value, it is estimated that there was a slight increase in tonnage. An upward trend in volume of imports accompanied by declining values was evident in the first six months of 1932. The value trend was downward during that period, indicating a lowering per ton value. With six months' data on the volume of imports available, it is estimated that the total volume for the year 1932 was 13,650,000 tons, an increase of 9 per cent. over the 1931 figure of 12,562,000 tons. The following table shows the value and volume of imports at the Port of New York for ten years.

The declines in the value of imports of principal commodities were not generally as pronounced as in the exports. Imports of rubber registered a decline of 59 per cent.; raw silk, 32 per cent.; coffee, 18 per cent., and sugar, 17 per cent. Imports of the above constituted about 39 per cent. of the total value of imports at the Port of New York.

Value and Tonnage of Import Trade at the Port of New York.

Year	Value	Per cent. U.S.	Tonnage	Per cent. U.S.
1923	$1,797.820,000	47·4	11,717,000	26·9
1924	1,690,003,000	46.8	11,084,000	27·1
1925	2,074,149,000	49·1	11,964,000	27·8
1926	2.224,964,000	50·2	13,110,000	30·0
1927	2,042,783,000	48·8	13,231,000	31·5
1928	1,950,057,000	47·7	15,252,000	32·8
1929	2,152,186,000	48·9	16,965,000	33·6
1930	1,468,687,000	47·9	14,897,000	30·6
1931	1.061,545,000	50·8	12,562,000	35·2
1932	*653,347,000	53·2	**13,650,000	39·1

*December estimated. **Six months estimated.

Commerce at Port Newark.

Port Newark, which is within and part of the Port of New York, has shared with the port as a whole in the decline of trade. The record for the calendar year 1932 shows a decline of 30 per cent. in the volume of water-borne receipts. Inbound lumber by vessel declined 45 per cent., and cargoes other than lumber 11 per cent. compared with 1931.

Water-borne Receipts at Port Newark.

	Calendar Years 1932	1931	Net Change Amount	Per Cent.
All Commodities (tons)...	388,786	552,162	—163,376	—29·6
Lumber (board feet) ...	112,887,000	203,995,000	—91,108,000	—44·7
Other Commodities (tons)	219,455	246,169	—26,714	—10·8

Inland shipments of lumber from Port Newark during the year amounted to 150,671,000 board feet, as against 276,681,000 feet in 1931, a falling off of 45 per cent.

The number of steamers arriving during the year increased 28 per cent. from 263 in 1931 to 338 in the calendar year 1932.

Exports of Grain during 1932.

The volume of grain, both domestic and Canadian, exported from the Port of New York during the calendar year 1932 amounted to 41,526,477 bushels, and was 18,908,859 bushels, or 31 per cent. less than in the previous year. The Canadian grain fell off 44 per cent. from 50,959,789 bushels in 1931, to 28,759,994 bushels in the year just closed. Exports of domestic grain registered an increase of 44 per cent. over 1931, the volume being 12,766,483 bushels in 1932 as compared with 9,475,547 bushels in the previous year.

	Calendar Years 1932 Bushels	1931 Bushels	Net Change Amount Bushels	Per Cent.
Domestic and Canadian Grain	41,526,477	60,435,336	—18,908,859	—31·3
Domestic Grain	12,766,483	9,475,547	+3,290,936	+34·7
Canadian Grain	28,759,994	50,959.789	—22,199,795	—13.6

Vessel Movements in Foreign Trade.

The total number of entrances of vessels in foreign trade at the Port of New York in the calendar year 1932 were 5,139, with a total net registered tonnage of 26,768,367. This is a falling off of 13 per cent. in the number of entrances as compared with the previous year. The clearances, numbering 5,275 were 14 per cent. less than in 1931. The following comparative table shows the entrances and clearances, and the respective net registered tonnages for the two years:—

	Calendar Years 1932	1931	Net Change Amount	Per Cent.
Entrances, No. of Vessels ...	5,139	5,928	—789	—13·3
Clearances, No. of Vessels ...	5,275	6,139	—864	—14·1
Entrances, Net. Reg. Tonnage	26,768,367	29,416,261	—2,647,894	—9·0
Clearances, Net. Reg. Tonnage	27,002,945	29,942,076	—2,939,131	—9·8

The entrances during the year 1932 included 465 vessels in ballast, which is 9 per cent. of the total, and is a slightly higher ratio than obtained in 1931, when 6 per cent. of the vessels entering were in ballast. In the clearances, 19 per cent. were in ballast as compared with 17 per cent. in 1931.

Seventy per cent. of both entrances and clearances in 1932 were direct between New York and foreign ports. In the year previous the ratio of direct entrances was the same as in 1932, but in the clearances, 74 per cent. were direct.

Port of Southampton Topics

Statistics for January, 1933, show Improvements.

The first figures for 1933 issued by the Southern Railway for Southampton Docks (the January figures) give cause for a certain amount of satisfaction, for they reveal a more gratifying state of affairs than at the corresponding period last year. While there are still some decreases recorded, there are nevertheless improvements under some of the headings.

Despite decreases in the number of ships using the port—197 inward and 196 outward, compared respectively with 216 and 220 in the corresponding month last year—there was an increase in the tonnage handled, for though the gross tonnage outward slumped from 938,751 tons to 918,118 tons, there was an increase inward of 48,241 tons—from 917,948 tons to 966,189—which more than made up the difference.

Similarly, in net tonnage, whereas the decrease outward was 25,820 tons—from 511,410 to 485,590—the increase inward was 29,938 tons—484,535 to 514,473.

The cargo returns were not very good, for the imports totalled only 31,128 tons, as compared with 34,884 tons, and exports 25,836 tons, as against 28,076 tons.

The passenger returns were well on the right side. The figure inward jumped from 6,214 to 8,077, an advance of 1,863, and outward there was a favourable balance of 27, the total being 7,556 in comparison with 7,529. The troop traffic also showed a substantial increase of 4,740 inward, while there was a decline of 1,931 outward.

Westbound Traffic on the North Atlantic in 1932.

Southampton was very interested in the figures of the North Atlantic Conference of west-bound traffic on the North Atlantic in 1932.

The conclusion to be drawn is that traffic undoubtedly follows the " Blue Riband," for the North German Lloyd, the owners of " Bremen " and " Europa," carried nearly 20,000 more passengers west-bound than any other company trading between Europe and the United States. It is obvious that the size and speed of ships is a big factor in passengers' minds.

BY AUCTION, 30TH MARCH, 1933,
AT DOLPHIN HOTEL, HIGH STREET,

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Close to the New Civic Centre

AND TO

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Within Short Radius of New Docks

6-9, GROSVENOR SQUARE and 83-94, BEDFORD PLACE

Four large inter-communicating houses on Grosvenor Square, and Shops, P.H., and Cottages in Bedford Place, some of the latter being let.

FRONTAGES 137 ft. and 286 ft. SITE AREA 34,000 Sq. Ft.

39-41, LONDON ROAD

Two Shops next to Eastmans (Butchers) and close to Boots Cash Chemists. Vacant Possession.

COMBINED FRONTAGE 31 ft. DEPTH 150 ft.
ONE OR TWO LOTS.

53, CARLTON CRESCENT

Corner Business Premises, facing London Rd. Vacant Possession.

FRONTAGE 144 ft. FLOOR SPACE 8,335 SQ. FT.

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The total number of passengers who crossed from Europe to the United States last year by Conference Lines was 226,611, compared with 308,126 in 1931 and 550,949 in 1930.

The North German Lloyd carried more first, second, tourist and third class passengers than any other company, their total being 53,674. The figures for the other Lines were: Cunard 35,679, White Star 29,524, Hamburg Amerika Line 24,579, Compagnie Generale Transatlantique 22,886.

On the Canadian route the Canadian Pacific Line, the owners of the " Empress of Britain," was ahead of all rivals, carrying 29,964 passengers out of a total of 46,410 who crossed to the Dominion.

North German Lloyd Express Liners to Call at Southampton on Westbound Voyages.

The announcement on February 25th that the North German Lloyd have decided to bring their express vessels, " Bremen," " Europa " and " Columbus," into Southampton Docks on their west-bound voyages from Bremenhaven to New York, instead of embarking passengers from a tender in Cowes Roads, was received with satisfaction at Southampton, for it will result in a big increase in the tonnage figures at the docks and an increase in dock dues.

The decision was reached following a conference at Bremenhaven between North German Lloyd officials and Southampton Dock officials, after Commodore L. Ziegenbein, commander of the " Bremen," and Captain Hans Schlueter, Chief Marine Superintendent of the N.G.L., had inspected the new berthing accommodation provided by the Southampton Docks extension scheme.

The new arrangement will take effect as from May 14th, when the " Bremen " will call. The official announcement makes no reference to the east-bound voyages, and it must therefore be assumed that the " Bremen " and " Europa " will continue to land passengers in Cowes Roads when homeward bound from the United States. The " Columbus " calls at Plymouth on her homeward run.

The change will no doubt increase the number of passengers travelling by the German boats, for they will now be able to step straight from train to ship instead of having to make the one hour's journey down Southampton Water by tender, a journey that is not very comfortable in bad weather.

Increased Export Tonnage from Vancouver, B.C.

According to figures recently published by the Vancouver Harbour Commissioners, exports from the port last year were considerably heavier than in 1931, but the falling off in import tonnage brought the total ocean-borne trade of Vancouver to a figure somewhat below that of 1931.

The port handled an aggregate of 6,499,397 tons of imports and exports in 1932, according to the Board's figures, as compared with 6,616,905 tons last year. Imports in 1932 aggregated 2,647,147 tons and exports 3,852,250 tons, as compared to the respective totals for 1931 of 3,321,582 tons and 3,295,323 tons. Grain exports reached 104,500,000 bushels.

The Harbour Board's list of arrivals shows an increase in deep-sea shipping, net tonnage figures being 4,055,760 as against 3,701,964 last year. The number of arrivals of deep-sea vessels was 1,014, compared with 954 in 1931. Foreign coastwise arrivals fell off appreciably, and there was also a reduction in local coastwise shipping.

Kiel Canal in 1932.

There was a decline of 28 per cent. in the tonnage passing through the Kiel Canal during 1932 compared with 1931, the figures being as follows:—

	No. of Vessels	Net Reg. Tons
1931	48,286	17,757,136
1932	41,633	12,849,714
Decrease ...	6,653	4,907,422

German shipping represented 80 per cent. of the total number of vessels and 53 per cent. of the total tonnage for 1932, viz., 33,117 vessels aggregating 6,745,838 net registered tons.

The highest record was in 1913, when 52,282 vessels passed through the Canal, but the aggregate tonnage was only 10,348,929 net tons.

The vessels in 1932 carried cargoes as follows: 143 with passengers; 2,180, coal; 341, stone; 422, iron; 1,624, timber; 6,852, grain; 126, cattle; 106, ore; 7,340, other bulk goods; 9,609, general cargoes; 870, miscellaneous cargo; and 11,670 (28 per cent.), empty or in ballast.

Bombay Port Trust

At a meeting of the Trustees of the Port of Bombay, held on January 24th, 1933, the following were the main items of business disposed of:—

A Government notification was recorded nominating the Officer Commanding the British Infantry Regiment at Colaba, Bombay, who commands the station in the absence of the General Officer Commanding, Bombay District, to act as a member of the Board of Trustees when the latter is absent from Bombay.

Sanction was accorded under the provisions of the Indian Ports Act to the annual contribution of Rs.5,000 to the Indian Sailors' Home, Bombay, in respect of the year 1932-33.

An expenditure of Rs.8,000 was sanctioned for renewing the luffing screws and crosshead nuts of the floating crane "Sarus."

To meet the convenience of through steamers which spend only a few hours at Ballard Pier or No. 18 berth, Alexandra Dock, the Trustees agreed to allow limited quantities of cargo to be shipped and discharged at these berths when necessary, subject to the introduction of a draft by-law restricting the liability of the Trustees for such cargo stored temporarily on the quay and open spaces adjoining the Ballard Pier Building.

The Board granted a 30-year renewal of leasehold Rent Roll No. 236, Frere Road, Elphinstone Estate (area approximately 4,419 sq. yds.), for shops, offices and godowns for storage of non-hazardous goods.

Imports and exports at the Port of Bombay:—

	1931 Quarter ended 31st Dec.			1932 Quarter ended 31st Dec.		
	Import Tons	Export Tons	Total Tons	Import Tons	Export Tons	Total Tons
Docks ...	354,944	495,219	850,163	454,463	415,221	869,684
,, (transhipment)	19,219	29.480	48,699	19,313	30,617	49,930
Bunders ...	221,465	79,724	301,189	257,731	75,532	333,263
Total ...	595,628	604,423	1,200,051	731,507	521,370	1,252,877
Total from 1st April to 31st Dec.	1,985,694	1,705,869	3,691,563	2,034,894	1,298,120	3,333,014

Vessels other than ferry steamers, hired transports, Government vessels and country craft, which entered the Port of Bombay:—

	1931 Quarter ended 31st Dec.		1932 Quarter ended 31st Dec.	
	No.	Nett Register Tonnage	No.	Nett Register Tonnage
Vessels engaged in foreign trade	200	835,970	217	968,787
,, ,, ,, coasting trade	603	489,696	709	560,720
Total from 1st April to 31st Dec.	1,944	3,698,409	2,029	4,148,047

At a meeting of the Trustees of the Port of Bombay, held on February 7th, 1933, the following were the main items of business disposed of:—

The following expenditure estimates were approved:—

Rs.21,000 for repairs to roof arches and beams of the Cotton Depot godowns.

Rs.2,079 for electric lighting at Sewri Bunder to ensure effective police supervision over the dangerous petroleum traffic.

Rs.1,048 for improved lighting at Ballard Pier Station in view of the greater use now made of the station at night owing to arrival of the English mail steamers on Thursday afternoons.

Amendments of the Docks Scale of Rates were approved, subject to the sanction of Government, to provide for the levy of a reduced wharfage on casein exported to coastal ports, for which there was no rate in the West Coast Schedule.

Launch of the Sewage Sludge Steamer "Mancunium"

The twin-screw sewage sludge steamer "Mancunium," built to the order of the City of Manchester Rivers Department for service at Manchester, was launched on February 25th, 1933, from the shipyard of Messrs. Ferguson Brothers (Port Glasgow), Ltd., with machinery aboard and steam up.

The vessel has been built to the specifications and design of Captain Reginald Marker, Marine Surveyor of Manchester, and has been constructed under his and the engineer, Mr. E. Mallinson's, personal supervision.

The vessel is to replace the existing sludge steamer "Joseph Thompson," which has been in service for many years. The dimensions of the "Mancunium" are: Length between perpendiculars, 246-ft.; breadth moulded, 38-ft. 3-in.; depth moulded, 16-ft. 6-in.

There are four large sludge tanks with a carrying capacity of 38,000 cub. ft., each fitted with an easily controlled loading valve operated from a central loading hatch. There are two large emptying valves to each tank, controlled from deck.

The accommodation for crew is in the forecastle; ship's officers accommodation is arranged in deckhouse amidships, and the engineers accommodation in deckhouse aft. The whole of the rooms are comfortable and roomy, and hot and cold baths are provided for officers and crew. All cabins are provided with steam and electric heating. Electric lighting is fitted throughout. The captain's room is on the main bridge.

The navigating bridge is fitted with compass, telegraphs, telemotor steering control gear. The steering gear of the Wilson Pirrie type is by Messrs. John Hastie and Co., Greenock.

A powerful steam combined windlass and capstan is placed on the forecastle, also a steam capstan aft.

The machinery, which has been constructed by the builders, consists of twin-screw triple engines with a complete set of modern auxiliaries, including separate centrifugal pumps, Weir's feed pump, feed heater and filter, boiler circulators, two large fire pumps and electric generator. The main condensers are supplied with circulating water from both sides of ship, and also from a valve placed at the bow to prevent sewage from clogging the circulating inlets.

Steam is supplied by two large marine boilers, each having three furnaces, working pressure 180 lbs. per sq. in.

Amongst those present at the launch were Councillor G. Harold White, Chairman of the Rivers Department; Mrs. G. Harold White; Councillor Stanley H. Hitchbun; Mr. Reginald Marker, Nautical Adviser; Mrs. and Miss Betty Marker; Mr. William Porthouse, Secretary of the Manchester Corporation Rivers Department, and Mrs. William Porthouse.

The vessel was gracefully christened by the Chairman's wife, Mrs. G. Harold White.

The ship has been built in a period of six months, or more than a month in advance of the contract period.

Diesel Electric Tug for the Thames

Lighterage on the River Thames, owing to local conditions, differs from that in any other port, and it is because of this that a type of tug has developed that stands in a class by itself.

Briefly, the distinguishing features of the Thames tug are: extraordinary strength in framing and topsides, rapid handling qualities, comparatively shallow draft with the minimum of deck erections set as low as practicable, and steam propulsion by a single screw.

The type has never altered in any way except in minor details, until the quite recent adoption by a few owners of direct diesel propulsion in comparatively low-powered craft. It is therefore extremely interesting to note that Messrs. Henry Robb, of Leith, have commenced the construction of a tug for this service with diesel electric propulsion.

The vessel will be 92-ft. by 22-ft. by 11-ft. 6-in., and on completion will be put into their petroleum lighterage service by the Union Lighterage Co., Ltd. Two diesel engines, each direct coupled to a main and auxiliary generator, will provide the power which will be transmitted to a single-screw propeller by a direct coupled electric motor capable of developing 580 b.h.p. at 120 r.p.m., which will be directly controlled from the steering shelter.

The principal advantages of this system of propulsion for this class of work are immediately apparent, combining as it does the efficiency of a slow running propeller and instantaneous control with economical operation and no "stand by" losses. In other words, whilst maintaining the high efficiency and sensitive control claimed for steam and the economy claimed for direct diesel propulsion, it has the disadvantages of neither.

The diesel machinery will be provided by Messrs. Mirrlees, Bickerton and Day, and the electrical equipment by the British Thomson-Houston Co., Ltd., and if the results which are confidently anticipated are achieved, the progressive policy of all concerned will be amply justified.

As this will probably be the first full-powered diesel electric tug to be built and operated in this country, it is fitting that the vessel should be designed and its construction superintended by Messrs. Constants, whose name has been associated with Thames tugs for forty years.

FOR SALE: Suction Dredger, motor driven; Main Pump 12"; 4" Jet Pump; 440 volts 3 phase; Feed cable and accessories; Pontoon 36 feet x 24 feet x 2 feet draft. Dismantled for shipment. Particulars and price from The Ardrossan Harbour Company, Ardrossan.

Irish Harbour Matters

Dublin

Claim for Demurrage Dismissed.

IN the High Courts, Dublin, Mr. Justice Sullivan and Mr. Justice O'Byrne dismissed with costs an appeal from a decision of Judge Shannon dismissing a claim for £20 made by N. Lykiahicopoulo, of Piræus, Greece, against the Merchants' Warehousing Co., Ltd., Burgh Quay, Dublin. The claim, which was said to involve a principle of great importance to owners of grain ships discharging at the Port of Dublin, was in respect of demurrage. The defendants were sued as endorsees of bills of lading and receivers of a cargo of grain sent by the s.s. " Panaghis " from Theodosia, Greece. The bills of lading incorporated a charter-party providing for the discharge of the cargo at the rate of 450 tons a day. The " Panaghis " arrived at Dublin with the cargo on August 31st, 1931, and notice of readiness to discharge was alleged to have been delivered to defendants at 9 a.m. on that date. The cargo of 1,368 tons would have been discharged in three days one hour. According to plaintiff, the discharge started at 8 a.m. on September 1st, and was not completed until 5 p.m. on September 4th, thus occupying three days seventeen hours. The charter-party provided for demurrage at the rate of £30 per day, and the plaintiff claimed £20 calculated at that rate for sixteen hours.

Mr. Frank FitzGibbon, K.C., and Mr. W. L. Sainbury (instructed by Mr. T. A. Ireland) appeared for the appellant, and Mr. E. S. Robinson (instructed by Messrs. Hayes and Son) for the respondents.

The Circuit Judge had found that the claim for demurrage could not be sustained, and that the plaintiff had failed to prove breach of contract. In the absence of evidence to the contrary the fact that the ship had not been unloaded at the rate specified in the charter-party might have been due to some neglect or omission on the part of plaintiff himself.

Mr. Justice Sullivan, delivering judgment, said that the original claim was for £20 in respect of demurrage, and the Circuit Judge had allowed an alternative claim to be made for the same amount for breach of contract because of the defendants not accepting the goods at a specified rate of discharge and for failure to unload. The Circuit Judge had come to the conclusion that the claim for demurrage could not be supported, and that the plaintiff had failed to prove that his ship was detained by any default on the part of the defendants. Mr. FitzGibbon had argued that a shipowner need only prove that he had brought his ship into port and that it was available for discharge, and that, if it were not discharged in the time specified, the defendants became *prima facie* liable. This argument could not be accepted by the Court, whcih found that the Circuit Judge was right in his finding.

Mr. Justice O'Byrne, concurring, said that a claim for demurrage could arise only under an express agreement to pay it, and he could not find in the charter party any agreement, express or implied, to pay demurrage during the first fifteen days. The action, then, had properly resolved itself into a claim for damages for breach of contract, but the Circuit Judge pointed out that there was no evidence before him to show that the delay was not due partly or solely to the acts of the shipowners. In the circumstances he was of opinion that the Circuit Judge was not only justified in coming to the conclusion that the plaintiff had failed to prove his case, but that no other conclusion was open to him.

The appeal accordingly was dismissed, with costs.

On the application of Mr. FitzGibbon, the Court agreed to give a certificate allowing a further appeal to the Supreme Court.

Dublin Port and Docks Board.

In connection with his election as Chairman of the Dublin Port and Docks Board, Mr. W. Baird paid a high tribute to the valuable help that he, both as chairman and vice-chairman, had always received from the officials. It would be difficult to find a Board staffed with abler officials than they had in Mr. Bailey (their Secretary), Mr. Mallagh (their Engineer) and Capt. Webb (their Harbour Master).

Suggested New Port Board Building.

In connection with the Port of Dublin, Mr. Charles McGloughlin, whose death last year deprived the Dublin Port and Docks Board of its Chairman, had an idea that all the Board's offices should be concentrated in a new building to occupy part of the space provided by the reclamation of the old dock which adjoins the Customs House. He believed that even the cost of a handsome building to face the quayside, adjoining and in character with the Customs House, would be justified by increased convenience and greater efficiency of staff work. If the project is revived, the sale of the Ballast Office, where the secretarial offices and board room are located, would probably provide substantial contribution towards the cost of the new premises.

Londonderry

Derry Harbour Board.

Mr. R. H. Smyth, D.L., reviewing the trade of the Port of Derry on the occasion of his election as Chairman of the Londonderry Port and Harbour Board for the seventh time in succession, pointed out how tonnage returns had fallen as compared with 1931, as shown in the following table:—

	1932 Tons	1931 Tons
Home Trade	297,971	307,808
Foreign Trade	88,795	111,454
Transatlantic Mail and Passenger Steamers	414,696	556,559

These figures show a decrease of 173,889 tons. Actually, Mr. Temple pointed out the number of vessels that entered the port was about the same—1,242 in 1932 as against 1,243 in 1931—but there was an appreciable decrease in the trans-Atlantic mail and passenger trade, and there would be no improvement in this connection until the restrictions on emigration by the American Government were removed. The figures were: Home trade, 1,142 vessels in 1932 as compared with 1,122 in 1931; foreign trade, 56 vessels as compared with 64; and trans-Atlantic 43 as compared with 57.

The live stock figures for the year were: Cattle, 70,955; sheep, 25,949; pigs, 5,075; as compared with 67,743 cattle, 32,350 sheep, and 5,384 pigs in 1931. Coal imports showed a decrease of 6,326 tons and maize a decrease of 9,933 tons.

They came out, however, with a small balance on the right side. The revenue amounted to £36,457, compared with £39,895 in 1931, a decrease of £3,136, which included loss of revenue following the reduction of tramway charges. The expenditure showed a decrease of £1,681, the total being £36,183.

Extensive dredging had been carried out in Rosser Bay channel and it was hoped to complete the work soon. Up to the end of December last 200,100 tons had been removed, the outlay being £6,899. The grab dredger was thoroughly overhauled at a cost of £500.

Concluding, the Chairman said that the port had been maintained at a high state of efficiency and the financial position of the Trust was sound. He thanked the general manager, Mr. R. S. Cripps; the engineer, Mr. Huston, and all other officials of the Board for their loyal co-operation in the work of the port.

The Chairman then moved the adoption of the reports, which was seconded by Mr. J. H. McConnell and passed unanimously.

Mr. McConnell said that the year's returns were even more satisfactory in view of the trade depression.

The Mayor (Senator D. E. B. McCorkell, M.B.E., D.L.) and Sir Basil McFarland, Bart., City High Sheriff, paid a tribute to the work of Mr. Smyth.

Cork

Omitted Queenstown Calls.

At a meeting of the Cork Harbour Board on February 8th, a letter was read from the general manager of the White Star Line, London, in regard to the failure of the " Brittanic " to call at Queenstown on December 22nd and January 21st. He added that the omission of the call was due entirely to exceptionally adverse weather conditions. It was regretted that the Chairman of the Cork Harbour Board felt these incidents as a reflection on the port, as such was far from their thoughts.

The Board agreed to acknowledge the letter with thanks, Mr. Mercier remarking that the White Star people had met them in a most exemplary manner and showed every anxiety to continue their services with the port under all conditions.

Dundalk

Dundalk Harbour Board.

At a meeting of Dundalk Harbour Board on February 8th it was reported that not a single beast had been shipped from the port for seven months.

Mr. David Barry, of the Dundalk and Newry Steampacket Co., wrote to the Board stating that owing to the altered conditions due to the imposition of a duty on live stock entering Great Britain from the Free State there were no stock offering for shipment from Dundalk. He added that his firm had made a special canvass of shippers and had offered a live stock sailing on many occasions, but without result. He added: " It is unfortunate that in the present state of trade sailings have had to be modified. In this your port is no exception."

Irish Harbour Matters—continued

Mr. T. F. McGahon, Chairman, said that it was strange that while ports of the same size as Dundalk were able to maintain a respectable live stock trade, Dundalk had been cut out completely. " It was a real sad day for Dundalk port," he added, " when the Dundalk and Newry Steampacket Co. passed out of local ownership."

The Board decided to take other steps towards regaining the trade which had been lost.

The Chairman pointed out that their tonnage for January was 2,000 tons less than for January, 1932.

Belfast

A Step Forward.

An interesting little event in the history of the Port of Belfast took place on February 4th, when the quay on the east side of the turning basin at the new dock on the Co. Antrim side of the river was used for the first time, following the arrival of the Greenock steamer " Ardgantock " with 1,000 tons of steel from Port Talbot for the new vessels to be built by Messrs. Workman, Clark and Co. This quay has been provided to improve the facilities for loading and discharging shipbuilding material into the shipyard of the firm named, and is situate almost opposite to the firm's offices.

The Harbour Commissioners decided last December to provide a crane line on the quay, to which they subsequently transferred No. 2 10-ton crane from the Musgrave Channel. This crane was used for the discharge of the cargo of the "Ardgantock."

Report of the Harbour Master.

The report of the Harbour Master submitted at the meeting showed that 416 vessels entered the port between January 15th and February 4th, as follows: Coastwise and cross-channel, 386; foreign, 21; non-trading, 9. The total tonnage of the vessels which arrived from January 1st to February 4th was: Coastwise and cross-channel, 260,071, an increase of 5,555 over the corresponding period last year; foreign, 46,528, a decrease of 42,250; non-trading, 13,126, an increase of 12,197; total, 319,725, a decrease of 24,498.

New Goods Shed to be Erected on the Westward Side of Dufferin Road for the Belfast Harbour Commissioners.

Messrs. Harland and Wolff, Ltd., Belfast, have recently secured a contract for the construction and erection of a new goods shed and collateral works in connection with the scheme of harbour development by the Belfast Harbour Commissioners.

The new shed, which is to be erected on the west side of the Dufferin Road, is 535-ft. 3-in. long by 91-ft. 8-in. wide and 25-ft. high to the underside of the roof trusses, 35-ft. high to the top of the ridge at centre of the spans, and has a floor area of about 49,000 sq. ft. It is built in two spans, and the main weight of the roof and walls, etc., is carried by three rows of columns built up of steel joists with bracing angles. These columns are spaced 30-ft. apart and directly support at their top 15-in. steel joists or girders which run the full length of the shed at the front, centre and rear. Also on the main columns, at about 17-ft. above the ground level, provision is made for rails to carry overhead cranes which travel along the length of the shed and provide easy handling of the goods. To the joists or girders at the top of the columns the roof principals or trusses are connected by bolts, and thus the whole weight of the shed is carried by the three rows of main columns. The front row of columns are bolted down to the timber of the quay and the centre and rear columns are bolted down to concrete blocks. The roof trusses are spaced 10-ft. apart and are built up of angle sections, making a girder about 9-ft. deep at its centre. On top of the roof trusses lines of purlin angles are worked the full length of the shed and are connected to the trusses by bolting, thus ensuring that the whole of the material of the roof is held rigidly in position. The purlin angles are filled in with wood fillings, to which the wood sarking or covering for the roof is well nailed down. Again on top of the sarking, wood laths are nailed down directly over the purlin fillings, and to these laths the asbestos cement tiles of the roof are fastened by galvanised screws. The centre of each span of the roof is finished off with a close fitting ridge capping piece securely fixed in position and thus ensuring perfect watertightness. The whole of the front and rear of the shed is made up of sliding gates which give easy access to any desired position. These gates are 10-ft. 8-in. wide and 17-ft. 3-in. high and are made up of channel frame work and stays, covered with galvanised corrugated sheeting. They have two cast iron wheels each, with ball bearings, which run on tram-rails at the bottom and at the top. Channel guides are fitted to keep the gates in position. The ends of the shed are also fitted with sliding gates, making a total of 110 gates. Above the top of the sliding gates the shed is finished off with galvanised steel sheeting. Light is obtained inside the shed from four glass panels in the roof which extend the full length, and also from glass panels in the front, rear and ends, and these panels are made watertight with lead flashing. All necessary gutters and down spouts are provided to carry rain water, etc., down to drains below the floor level. There are also ten extractor ventilators fitted in the roof to purify the air inside the shed.

This is the second contract of this nature which Messrs. Harland and Wolff have secured in connection with the Harbour Commissioners' scheme of extension, as they completed last year a somewhat similar shed on the westward side of the new turning basin at Northern Road, Belfast.

Port of London Notes

London's Ships in 1932.

Nearly 54,000,000 net registered tons of ships used the Port of London in 1932 compared with slightly over 56,000,000 net registered tons in 1931 and only 7 per cent. less than in the record year of 1930. The decrease last year of little more than 2,000,000 tons, or 3.8 per cent., was in respect of traffic between Empire and foreign ports. Coasting ships at 15,901,444 net registered tons actually increased by nearly 6 per cent. over 1931.

Tilbury Passenger Landing Stage.

Twenty-five vessels, totalling 284,496 gross registered tons, used the Tilbury passenger landing stage during the month of January, 1932. Altogether 4,070 passengers were embarked or disembarked at the stage, in addition to baggage and mails.

London's Shipping.

During the week ended January 27th, 882 vessels, representing 823,729 net registered tons, exclusive of those in ballast, used the Port of London; 381 vessels (609,987 net registered tons) were to and from Colonial and foreign ports, and 500 vessels (213,742 net registered tons) were engaged in coastwise traffic.

* * * *

During the week ended February 2nd, 836 vessels, representing 974,057 net registered tons, exclusive of those in ballast, used the Port of London; 397 vessels (785,632 net registered tons) were to and from Colonial and foreign ports, and 439 vessels (188,425 net registered tons) were engaged in coastwise traffic.

During the week ended February 10th, 1,054 vessels, representing 926,839 net registered tons, exclusive of those in ballast, used the Port of London; 404 vessels (714,394 net registered tons) were to and from Empire and foreign ports, and 650 vessels (212,445 net registered tons) were engaged in coastwise traffic.

* * * *

During the week ended February 17th, 826 vessels, representing 840,845 net registered tons, exclusive of those in ballast, used the Port of London; 391 vessels (645,198 net registered tons) were to and from Empire and foreign ports and 435 vessels (195,647 net registered tons) were engaged in coastwise traffic.

Shipping Laid-up in Hamburg

The following figures taken from the Press show the tonnage laid up in the Port of Hamburg during the last six months:—

	No. of Vessels	Gross Reg. Tons
September 1st, 1932	183	764,228
October 1st, 1932	147	657,939
November 1st, 1932	137	642,073
December 1st, 1932	142	611,936
January 1st, 1933	145	568,693
February 1st, 1933	146	542,108

Of the 146 vessels laid up on February 1st, 137 were German and 5 British. The vessels included in these statistics are those which have been temporarily placed out of service and allotted a berthing place for lying up.

The Port of Casablanca (continued from page 138)

Lifting and Handling Plant.

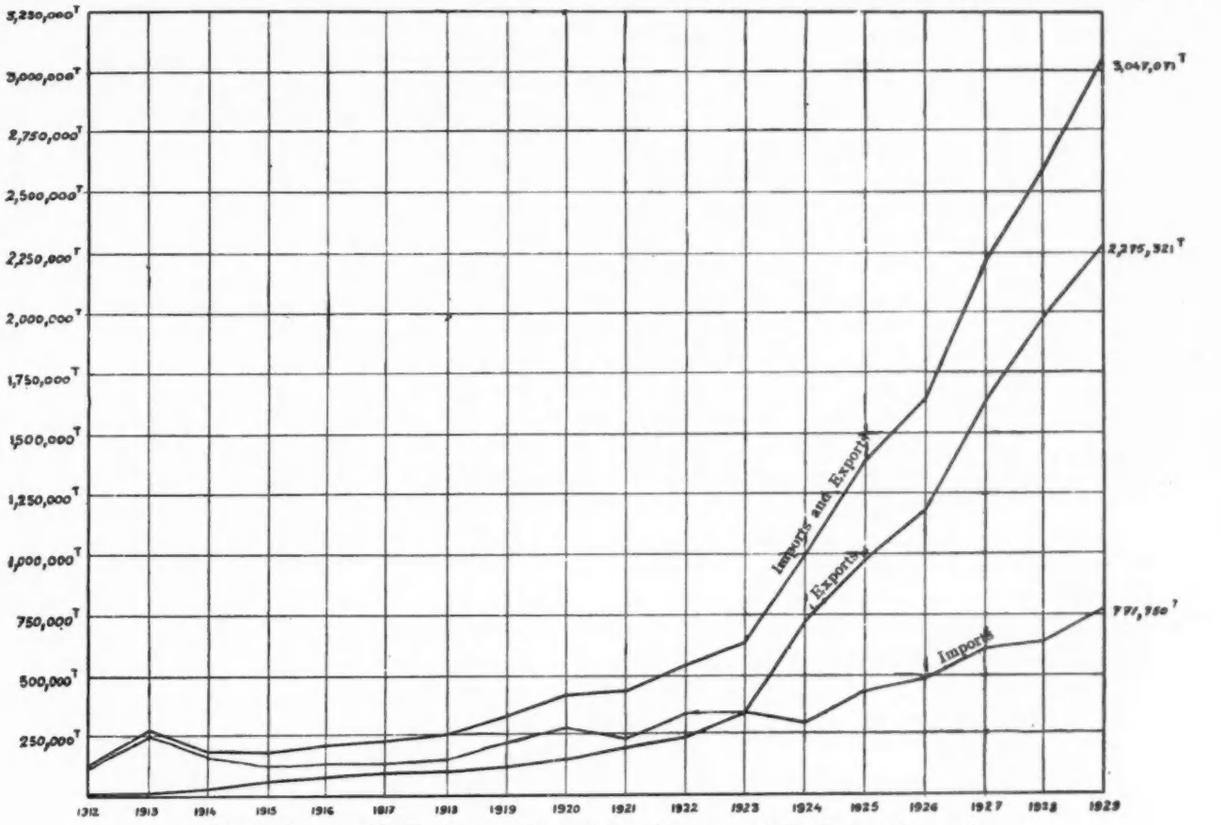
The loading and discharging of ships and barges alongside the wharves is provided for by 27 steam cranes, ranging in capacity from 1½ to 25 tons, and by 28 electric cranes, 23 of which are of 5-ton rating with luffing jibs. In addition three portable cranes of 5 tons and a travelling gantry crane of 36-metre span and a lifting capacity of 25 tons serve for handling unloaded goods on the quays.

A floating transporter of 15 tons is devoted to coal handling between ships and lighters. In addition, for lifting very heavy loads, the floating sheerlegs and the titan cranes belonging to the contractors are available for use and have rendered good service.

Ship Repairs.

There are as yet no graving docks at Casablanca, but they form part of the programme of work still remaining to be done. At present ships have at their disposal a floating dry-dock of 5,500 tons capacity, of which the following are particulars:—Length, 136.50 m.; breadth, 19.50 m.; height of keel blocks, 1.20 m.; draft over the blocks, 5.30 m.; machinery, 4 centrifugal electric pumps of 75 k.v.a.; power, 3-phase 50-period current, 460 volts; time required to dewater the dock with a 4,000-ton vessel in it, about one hour.

This dock is suitable for most of the small vessels frequenting the harbour, and is found most useful. For light fishing and pleasure boats there are two slipways, one of which is provided with an electric winch of 55 kw., which can haul up vessels up to 900 tons.



Graph showing Traffic from 1912 to 1929. Tonnage of Goods (metric tons).

Sheds.

Goods unloaded from ships are not despatched to destination until after the various operations of transit, tallying, reception and customs clearance have taken place. Meanwhile the goods are deposited temporarily in transit sheds. These are light buildings, of timber or steel framing, covered with fibro-cement sheeting and having walls and gables of breeze bricks. These sheds cover a superficial area of 35,000 square metres.

Access Roads.

Access to the wharves, sheds and dump-yards is assured by a system of roads and paved areas covering about 80,000 square metres, of which one-half are in ordinary macadam, one-quarter with modern surfacing, and one-quarter sett-paved. This latter paving is gradually replacing the other two kinds, as it is found to be the only kind of pavement that can withstand the intensely heavy traffic which the harbour roads have to carry.

Railway System.

The railway system of Casablanca Harbour is as yet incomplete and will only be fully developed as the interior moles or jetties reach completion. At the commencement it only comprised tracks of 60 cm. gauge, for it was connected with the military lines which for ten years constituted the only railway in Morocco and which gave excellent service. Then the construction of standard gauge lines led by degrees to the disappearance of the narrow gauge. The exploitation company (La Manutention Marocaine), however, has kept some 15 kilometres of narrow-gauge track for the traffic between wharves and warehouses. This company possesses, for the purpose of this special service, some ten locomotives and tractors and 300 wagons.

The standard gauge system covers 22 kilometres. Its service is provided by the Morocco Railways Company. The motive power is steam.

Phosphate Wharf.

It may be interesting to give a short description of the modern equipment with which the Office Chérifien des Phosphates has furnished its loading berth. This depot, which is virtually a factory, is situated at the outer end of the transverse breakwater and occupies a roofed-in area of 20,000 square metres. The phosphate is brought direct from the Kourigha Mines by special trains of hopper wagons. These discharge automatically over conveyor belts, which take the phosphate into elevators or into ships' holds by means of endless chains of buckets and of other conveyor belts. The installation is capable of handling 2,000 tons per hour. It has been designed and built by the Société d'Etudes Spéciales.

VII—The Trade of the Port

Future Operation.

After perusing the foregoing notes the reader may perhaps ask himself whether these extensive works, this powerful equipment, the immense sums of money invested—in a word whether this gigantic effort is not out of place in a little corner of the land of Africa, the development of which is still so immature.

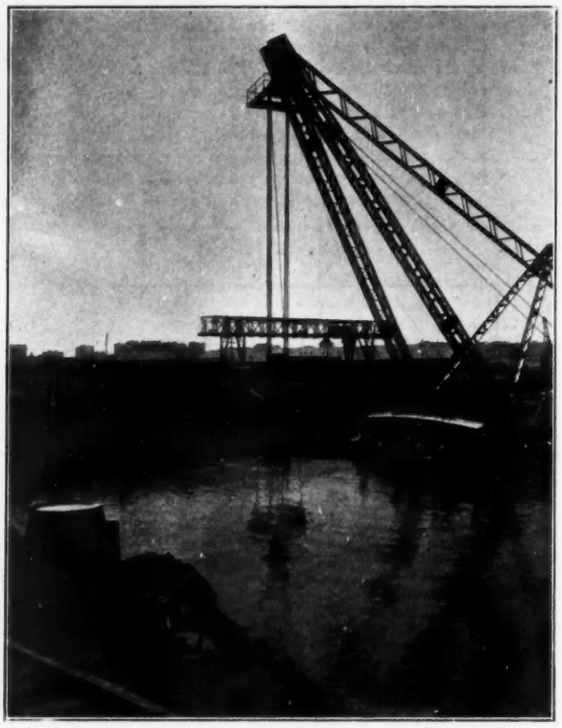
A few figures will supply the answer.

In 1907, Casablanca had a population of 25,000; the tonnage of shipping visiting its roads did not exceed 225,000 registered tons. In 1930 the population had increased to 150,000 inhabitants and the shipping to 5 million tons, thus placing this port eighth on the list of French ports, practically on an equality with Nantes.

The graph above shows the tonnage of merchandise which passed through the port from 1912 to 1929. It will be noticed

The Port of Casablanca—*continued*

that up to 1923 the export curve is below that of the imports. In 1923 they are equal, and from that time the export curve rises suddenly and maintains this rapid increase, whilst the import curve rises much more slowly. The difference is mainly due to the development of the phosphate industry, which only



Photo] [Schneider & Co., Casablanca

The 150-ton floating sheerlegs laying the first foundation block for the grain elevators, January, 1931.

came into full operation in 1923 and which has since made continual progress without a hitch. The other chief articles of export are cereals and early fruit and vegetables, but the agricultural development of the country is only at its inception, harvests are irregular and, moreover, markets at the present time seem to be rather restricted.

Yet the continuous increase of trade requires a corresponding expansion of the means of transport, and in a few years' time the centre of the harbour's activity, which may now be located in the vicinity of the Sidi-Belyoud area, will move eastwards, probably towards the root of the internal moles or jetties, which will be equipped in a uniform and very modern fashion.

These works have been designed of ample width (220 metres), so that they can receive cargo quickly and release in the shortest possible time the vessel alongside.

For this purpose, in addition to the area provided by these moles or jetties, their quays will be provided with rapid and powerful cranes. This equipment is in course of erection, and on the eastern wharf of the Commerce Jetty, 800 metres long, there will soon be available 20 electric cranes with luffing jibs, very rapid in movement and capable of lifting 5 tons at 13 metres outreach from cope line, with 18 metres height of lift. The capacity of these cranes, working in pairs on a steamer's cargo, will easily reach 800 tons per day of bulky packages or 2,000 tons of heavy goods.

For the grain trade, special elevators are in course of construction, with apparatus for emptying bags and automatic machinery for loading in bulk. These elevators, built of reinforced concrete, will have a total capacity of 30,000 tons and will be able to load up to 400 tons per hour. The power necessary for the various operations of the Commerce Jetty is supplied by direct current of 460 volts from a sub-station of mercury vapour transformed of 1,800 k.v.a.

Large storage sheds for general and special cargoes and quayside transit sheds are to be built as a permanent installation along the jetties. Ample standing and sorting sidings complete the railway communication with these quays, and sett-paved cart roads supplements the railway tracks.

The new Coal Wharf in course of construction to the south of the Phosphate Depot will be provided with two large gantry cranes, with grabs, lifting arms, conveyor belts and automatic shoots for unloading, the whole having a capacity of 300 tons per hour.

VIII—Conclusion

The rôle of Casablanca in the economic development of Morocco is therefore of the first importance. It is the only wide gateway opening into the Cherifian Empire, and 80 per cent. of the whole goods traffic of Morocco will pass over the quays of this port. There is every reason to hope that the importance of this rôle will increase as the country becomes better equipped and reaches its full agricultural and mining development.

The results so far have exceeded expectations, and if this is no excuse for exaggerated optimism, it is at any rate sufficient to establish a solid confidence in the future of Morocco.

This confidence which inspired the early pioneers of the Moroccan Protectorate must be felt all the more by their successors, who have before their eyes the lesson of productive energy represented by the conception and the realisation in 15 years of the undertaking of the great harbour of Casablanca.

The Port of Amsterdam

The position of the Port of Amsterdam can be seen from the following figures in regard to number of vessels and tonnage and to the goods traffic arrived and cleared, as compared with the corresponding figures of last year:—

SEAGOING VESSELS AND TONNAGE

	ARRIVALS				SAILINGS			
	No.	Per Cent.	N.R.T.	Per Cent.	No.	Per Cent.	N.R.T.	Per Cent.
January 1932	276		440,568		292		459,872	
,, 1933	258		363,180		271		410,514	
	—18	—6·52	—77,388	—17·57	—21	—7·19	—49,358	—10·73
December 1932	301		431,182		296		442,494	
January 1933	258		363,180		271		410,514	
	—43	—14·29	—68,002	—15·77	—25	—8·45	—31,980	—7·23

SEAGOING GOODS TRAFFIC
(In Tons of 1000 Kilos*).

	1 Import	2 Transit incl. in col. 1	3 Export	4 Transit incl. in col. 3	5 Total col. 1 & 3
December 1931 ...	342,612	64,550	126,587	38,103	469,199
,, 1932 ...	353,692	63,636	128,764	42,378	482,456
	+11,080	—914	+2,177	+4,275	+13,257
	+3·23%	—1·42%	+1·72%	+11·22%	+2·83%
November 1932 ...	279,883	59,932	111,124	29,515	391,007
December 1932 ...	353,692	63,636	128,764	42,378	482,456
	+73,809	+3,704	+17,640	+12,863	+91,449
	+26·37%	+6·18%	+15·87%	+43·58%	+23·39%
Jan.-Dec. 1931 ...	3,889,633	758,931	1,780,686	582,561	5,670,319
,, 1932 ...	3,490,794	628,450	1,364,214	392,282	4,855,008
	—398,839	—130,481	—416,472	—190,279	—815,311
	—10·25%	—17·19%	—23·39%	—32·66%	—14·38%

*These figures have been taken from the monthly statistics of the Central Bureau, The Hague, Holland.

Classified according to flag, the number of vessels which entered the Port of Amsterdam during January was: Dutch, 124; British, 56; German, 28; Swedish, 19; Norwegian, 13; Danish, 2; French, 3; Greek, 4; Lettish, 2; Finnish, 1; Polish, 1; Italian, 1; Dantzig, 1; Russian, 2; Hungarian, 1.

Vessels laid up at Amsterdam were: January 1st, 1933, 36 vessels measuring 220,424 tons gross; February 1st, 1932, 51 vessels measuring 302,311 tons gross; February 1st, 1933, 36 vessels measuring 215,411 tons gross.

Toronto Harbour

Continued Increase in Water-borne Trade

The Toronto Harbour Commissioners report that the net tonnage of vessels entering and clearing the port last year totalled 5,361,604 tons, as compared with 5,113,648 tons in 1931, 4,116,729 tons in 1930, 3,931,203 tons in 1929, and 3,514,274 tons in 1928. The cargo tonnage inward and outward for the year just closed totalled 2,270,445 tons, an increase over 1931 of 148,379 tons.

Last year's cargo tonnage is nearly double that handled in 1930, the increase being attributed to the improved navigation facilities afforded by the Welland Ship Canal.

During the 1932 navigation season, 1,061,965 tons of coal and coke were handled in the port, a tonnage about double that of 560,347 tons dealt with in 1931, and more than four times the quantity unloaded in 1930, when 225,992 tons were handled. Oil shipments totalled 175,751,000 gallons, an increase during the year of 18,636,000 gallons; grain shipments totalled 7,591,169 bushels, including 5,673,451 bushels unloaded at the elevator and 1,917,718 bushels on vessels in winter storage.